

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

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ARTEC EUROPE S.À.R.L.,

Plaintiff,

-against-

ORDER

1:22-CV-1676 (OEM)(VMS)

SHENZHEN CREALITY 3D TECHNOLOGY CO., LTD.,
and SHENZHEN JIMUYIDA TECHNOLOGY CO., LTD.,

Defendants.

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ORELIA E. MERCHANT, United States District Judge:

This case was filed by Plaintiff Artec Europe S.À.R.L. (“Plaintiff” or “Artec”) against Defendants Shenzhen Creality 3D Tech. Co., Ltd., and Shenzhen Jimuyida Technology Co., Ltd. (collectively, Defendants” or “Creality”). Artec alleges patent infringement claims against Creality related to U.S. Patent Nos. 7,768,656 (the ’656 Patent); 8,488,129 (the ’129 Patent), and 10,962,357 (the “357 patent”) (collectively, the “Asserted Patents”), which all relate to three-dimensional (3D) scanning. Second Amended Complaint (“SAC”), ECF 106.

Before the Court are the parties’ dispute regarding the scope of claim construction terms. See Joint Claims Construction Chart (“JCCC”), ECF 116. The Court held a *Markman* hearing¹ on June 6, 2024 (“First Markman Hearing”), and a continued hearing on July 17, 2024 (“Second Markman Hearing”). For the reasons that follow, the claim terms shall be construed as set forth below.

¹ “Victory in a [patent] infringement suit requires a finding that the patent claim covers the alleged infringer’s product or process, which in turn necessitates a determination of what the words in the claim mean.” *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 374 (1996) (cleaned up). A Markman hearing is held to allow the parties to present evidence and argument with respect to disputed terms in a claim.

LEGAL STANDARDS

“Claim construction is the single most important event in the course of a patent litigation.” *Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 659 F.3d 1369, 1370 (Fed.Cir.2011). “It defines the scope of the property right being enforced, and is often the difference between infringement and non-infringement, or validity and invalidity.” *Id.* Claim construction is a legal question for the court. *Markman*, 517 U.S. at 382.

A. Claim Construction

A “district court’s duty at the claim construction stage is, simply, . . . to resolve a dispute about claim scope that has been raised by the parties.” *Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1319 (Fed. Cir. 2016).

“It is a ‘bedrock principle’ of patent law that ‘the claims of a patent define the invention to which the patentee is entitled the right to exclude.’” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)); *see also Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) (“we look to the words of the claims themselves ... to define the scope of the patented invention”); *Markman*, 52 F.3d at 980 (“The written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of claims.”).

“First, we look to the words of the claims themselves, both asserted and nonasserted, to define the scope of the patented invention.” *Vitronics*, 90 F.3d at 1582. “Although words in a claim are generally given their ordinary and customary meaning, a patentee may choose to be his own lexicographer and use terms in a manner other than their ordinary meaning, as long as the special definition of the term is clearly stated in the patent specification or file history.” *Id.*

(citation omitted); *accord Phillips*, 415 F.3d at 1312–13. The Federal Circuit has “made clear, moreover, that the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art [a “POSITA”] in question at the time of the invention, *i.e.*, as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1312-13 (citation omitted).

“If the meaning of a claim is not clear on its face, a court looks to intrinsic and extrinsic evidence.” *Radiancy, Inc. v. Viatek Consumer Prod. Grp., Inc.*, No. 13-CV-3767(NSR)(LMS), 2015 WL 221063, at *2 (S.D.N.Y. Jan. 14, 2015). Intrinsic evidence is the starting point and includes the patent’s specification and prosecution history before the United States Patent and Trademark Office (the “PTO”). *Vitronics*, 90 F.3d at 1582. “The specification contains a written description of the invention which must be clear and complete enough to enable those of ordinary skill in the art to make and use it. Thus, the specification is always highly relevant to the claim construction analysis.” *Vitronics*, 90 F.3d at 1582. “Usually, [the specification] is dispositive; it is the single best guide to the meaning of a disputed term.” However, the Federal Circuit has provided two guiding caveats. First, a court should be careful not to import limitations from the specification into a claim. *Comark Commc’ns v. Harris Corp.*, 156 F.3d 1182, 1186 (Fed. Cir. 1998); *see also Tate Access Floors*, 279 F.3d at 1371. Second, a court should not confine a claim to the specific embodiments in the specification. *Nazomi Commc’ns., Inc. v. ARM Holdings, PLC*, 403 F.3d 1364, 1369 (Fed. Cir. 2005).

“The court may also consider the prosecution history of the patent, if in evidence.” *Id.* (citation omitted). “This history contains the complete record of all the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the scope of the claims. As such, the record before the Patent and Trademark Office is

often of critical significance in determining the meaning of the claims.” *Id.* However, prosecution history, in certain circumstances, can be of limited weight “as prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification[.]” *Phillips*, 415 F.3d at 1317.

“Finally, a court may consider extrinsic evidence like expert testimony, dictionaries, and treatises, but such evidence is generally of less significance than the intrinsic record.” *Virnetx, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1316 (Fed. Cir. 2014) (quotation marks omitted). “In those cases where the public record unambiguously describes the scope of the patented invention, reliance on any extrinsic evidence is improper.” *Vitronics Corp.*, 90 F.3d at 1583.

B. Means Plus Function

Defendants contend that several of the claims are subject to “mean plus function” construction, the statutory basis for which can be found in 35 U.S.C. § 112(6). Whether claim language invokes 35 U.S.C. § 112(6), is legal question for the Court. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346 (Fed. Cir. 2015) (en banc).

Section 112, which governs the specification of a patent, provides that:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112(6).

Accordingly, “[l]imitations that invoke § 112 ¶ 6 are generally known as ‘means-plus-function’ or ‘step-plus-function’ limitations.” *Dyfan, LLC v. Target Corp.*, 28 F.4th 1360, 1365 (Fed. Cir. 2022).

“The overall means-plus-function analysis is a two-step process.” *Dyfan* 28 F.4th at 1365 (citing *Williamson*, 792 F.3d at 1349–51). “The first step is to determine whether a claim limitation

is drafted in means-plus-function format, which requires [a court] to construe the limitation to determine whether it connotes sufficiently definite structure to a person of ordinary skill in the art.” *Id.* (citing *Williamson*, 792 F.3d at 1349). “If the limitation connotes sufficiently definite structure, it is not drafted in means-plus-function format, and § 112 ¶ 6 does not apply. If, however, [the court] conclude[s] that the limitation is in means-plus-function format, [it] perform[s] the second step of determining “what structure, if any, disclosed in the specification corresponds to the claimed function.” *Id.* (citing *Williamson*, 792 F.3d at 1351).

“Because invoking § 112 ¶ 6 is typically a choice left to the claim drafter, [a court] presume[s] at the first step of the analysis that a claim limitation is subject to § 112 ¶ 6 when the claim language includes the term ‘means.’” *Id.* (citing *Williamson*, 792 F.3d at 1348 (noting that the Federal Circuit has “long recognized the importance of the presence or absence of the word ‘means’”)). “The inverse is also true—[the Federal Circuit] presume[s] that a claim limitation is *not* drafted in means-plus-function format in the absence of the term ‘means’” *Id.* (emphasis added). The Federal Circuit has “made clear, however, that this presumption is rebuttable.” *Id.* “The presumption can be overcome if a challenger demonstrates that the claim term fails to recite sufficiently definite structure.” *Id.* (cleaned up).

The Federal Circuit has “also held that nonce words that reflect nothing more than verbal constructs may be used in a claim in a manner that is tantamount to using the word ‘means,’” and thus can invoke § 112 ¶ 6. *Id.* (citing *Williamson*, 792 F.3d at 1350) (quotation mark omitted). The Federal Circuit has “emphasized that the essential inquiry is not merely the presence or absence of the word ‘means,’ but whether the words of the claim are understood by persons of ordinary skill in the art to have a *sufficiently definite meaning* as the name for structure.” *Id.* (citing *Williamson*, 792 F.3d at 1348) (emphasis added); *accord Zeroclick, LLC v. Apple Inc.*, 891 F.3d

1003, 1007 (Fed. Cir. 2018). “What is important is ... that the term, as the name for structure, has a reasonably well understood meaning in the art.” *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996).

C. Person of Ordinary Skill In The Art (“POSITA”)

Artec asserts that a “person of ordinary skill in the art” or “POSITA” at the time of the alleged inventions in the patents-in-suit “would typically have a bachelor’s degree in computer science, electrical engineering, or a related field, along with at least two years of relevant professional experience, especially in areas related to 3D geometry capturing, modeling, and processing.” Artec’s Opening Claim Construction Brief (“Pl’s Memo”) 3-4, ECF 117 (quoting Declaration of Dr. Iman Sadeghi (“Sadeghi Decl.”), ECF 117-1 ¶ 35). Alternatively, Artec poses that “a person with an advanced degree in these fields but with less professional experience might also qualify as a POSITA, reflecting the diversity in how expertise can be acquired in these technical areas.” *Id.* (quoting Sadeghi Decl. ¶ 36).

Here, in support of its Markman construction submission, Artec proffers the declaration of Dr. Iman Sadeghi (“Dr. Sadeghi”), an expert witness. *See* Sadeghi Decl. ¶ 1. Dr. Sadeghi is “an award-winning computer scientist and software engineer holding both a doctorate and master’s degree in computer science from the University of California San Diego[.]” *Id.* ¶ 5. Dr. Sadeghi has “extensive experience in computer science, software engineering, computer graphics, appearance modeling, 3D geometry, 3D processing, and 3D rendering.” *Id.* Dr. Sadeghi has “more than fifteen years of professional industry experience in the fields of computer science, software engineering, and/or computer graphics.” *Id.* ¶ 6. “Given [his] comprehensive education and experience, as detailed” in his CV, Dr. Sadeghi considers himself “aligned with the standard qualifications of a POSITA” as it concerns the Asserted Patents. *Id.* ¶ 37.

Creality does not oppose this proffer of a POSITA or Dr. Sadeghi's qualifications. *See generally* Creality's Responsive Claim Construction Brief ("Defs' Memo"), ECF 120. Thus, the Court finds that Dr. Sadeghi is qualified as POSITA.

CLAIM CONSTRUCTION

A. The '656 Patent

In abstract, '656 Patent claims an invention for "a system and method are provided for the 3D measurement of the shape of material objects using non-contact structured light triangulation." *See* '656 Patent, Declaration of John E. Handy, Ex. 1, ECF 117-2.

1. "a light projector for"

The parties dispute the meaning of "a light projector for" which appears in claim 1 of the '656 Patent.

The relevant portion of the claim phrase in claim 1 recites:

a light projector for projecting a structured light pattern onto a surface of said object, **wherein said light projector comprises** a light source, a slide with a slide pattern located on a slide surface, and a projector lens characterized by a projector lens vertex;

'656 Patent at 8:17-21 (emphasis added).

a. Parties' Positions

The parties' proposed constructions are shown below:

Artec's Construction	Creality's Construction
a device that projects light	"a device for projecting slides or film"

Artec argues that its construction provides the plain and ordinary meaning of the term and should be adopted. *See* Pl's Memo at 4-6, ECF 117. Creality initially contended that the term was subject to means plus function analysis, *see* JCCC at 1, but in its responsive brief withdrew this

contention. *See* Defs’ Memo; Artec’s Reply Claim Construction Brief 1-2 (“Pl’s Reply”), ECF 121.

b. Analysis

Here, the Court finds that plain and ordinary meaning controls. To adopt Defendants’ construction and include “for projecting slides or film” into the claim language would be contrary to the established principles of patent law. The full claim phrase in claim 1 already recites language explaining further the structure of “light projector,” which is comprised of “a light source, a *slide* with a slide pattern located on a slide Surface, and a projector lens characterized by a projector lens vertex.” ’656 Patent at 8:17-21. The Federal Circuit has “reinforced the importance of construing claim terms in light of the surrounding claim language, such that words in a claim are not rendered superfluous.” *Digital-Vending Servs. Int’l, LLC v. Univ. of Phoenix, Inc.*, 672 F.3d 1270, 1275 (Fed. Cir. 2012). Here, Defendants’ proposed inclusion of the word “slides” in the construction of the claim term would render that term superfluous as it already appears further within the claim. Further, the addition of the limitation of the word “film” is without basis in the intrinsic evidence and so to import the word into the claim here would be in contravention of bedrock patent principles. The Court declines “to redraft the claim limitation at issue to include [Creality’s] additional [film and slide] language.” *WSOU Invs. LLC v. Google LLC*, No. 2022-1066, 2023 WL 6210607, at *8 (Fed. Cir. Sept. 25, 2023).

The Court construes the term in its plain and ordinary meaning and adopts Plaintiff’s construction of “a device that projects light.”

2. “a slide pattern located on a slide surface”

The parties dispute the meaning of “a slide pattern located on a slide surface,” which appears in claims 1 and 12 of the ’656 patent. The full claim phrase for claim 1 is recited as:

a light projector for projecting a structured light pattern onto a surface of said object, wherein said light projector comprises a light source, a slide with a *slide pattern located on a slide surface*, and a projector lens characterized by a projector lens vertex;

’656 Patent at 8:17-21 (emphasis added)

a. Parties’ Positions

The parties’ proposed constructions are shown below:

Artec’s Construction	Creality’s Construction
a pattern on a slide surface	A slide pattern that is on the surface of a slide

b. Analysis

Ultimately, the Court agrees with Creality that the plain and ordinary meaning of the language indicates that there must exist a (1) “slide pattern” that (2) must be present or spatially located on the “surface” of a “slide.” *See* Defs’ Memo at 13-14. To reach this conclusion, the Court first address three antecedent issues of construction which are baked into the claim term.

First, what exactly is a “slide pattern”? Artec argues that the term means simply a “pattern” and that the ’656 Patent was drafted using the word “slide pattern” only so as to “distinguish this claim term from another ‘pattern’ recited in the claims, *i.e.* the ‘structured light pattern.’” Pl’s Memo at 6 (citing ’656 Patent at claims 1, 12.). However, the evidence in the ’656 Patent itself indicates otherwise.

The language of claim 1 itself further provides that “said **slide pattern comprises** a plurality of coded elements,” ’656 Patent at 8:30-31. In this way, Artec was “act[ing] as [its] own lexicographer.” *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir.

2002). That is, Artec was “stating that the term [slide pattern] has a particular meaning within the patent[.]” *Abbott Lab’ys v. Andrx Pharms., Inc.*, 473 F.3d 1196, 1210 (Fed. Cir. 2007). Accordingly, “slide pattern” takes its meaning from the claim language itself and the Court need not construe it further.

Second, what is considered a “slide” under the claim language? Artec argues that the term “slide” in claim 1 and 10 includes not only what the specification dubs a “slide-type” of slide – which the Court understands from a plain and ordinary meaning to be akin to plate of film used in, *e.g.*, a Kodak carousel slide projector – but may *also* include a liquid-crystal display (“LCD”) type of slide. *See* ’656 Patent at 3:7-12. (“In one embodiment, the projector 106 is a slide projector including a light source 126 and a light modulating device 122 for modulating the light emitted from the light source.”); *Id.* 3:12-16. (“The light modulating device 122 may be a slide-type including a slide, a liquid crystal display (LCD)-type”); Transcript of First Markman Hearing (“First Markman Hr’g Tr.”) 32:18-25, ECF 127.

Crucially, the specification of the ’656 Patent provides an example of one embodiment of which states in relevant part that:

in this embodiment the projector 106 is a slide projector including a light source 126 and a light modulating device 122 for modulating the light emitted from the light source 126. **The light modulating device 122 may be a slide-type including a slide, a liquid crystal display (LCD)-type including a liquid crystal screen, or other device for creating structured light**, where such device will be *hereinafter referred to as slide*.

Again, the Court finds that this indicates that Artec was acting as its own lexicographer. *See, e.g., Abbott Lab’ys*, 473 F.3d at 1210 (quoting patent language “‘Erythromycin derivative’ as used herein, *means*” and finding that such words are indicating that the claim term was “different from the ordinary understanding of a person of skill in the art, by stating that the term has a particular meaning within the patent.”). Thus, to the extent Creality seeks to limit the construction

of “slide” to mean only “slide-type” of slides, that argument is rejected. *See* Defs’ Memo at 15 (arguing “the claims are only directed to and can only encompass ‘slide-type’ devices with a pattern located directly on the slide.”). As Artec points out, such a reading would exclude an explicit and preferred embodiment of the invention. “[A] claim construction that excludes a preferred embodiment . . . is rarely, if ever correct and would require highly persuasive evidentiary support.” *Epos Techs. Ltd. v. Pegasus Techs. Ltd.*, 766 F.3d 1338, 1347 (Fed. Cir. 2014). Here, no such highly persuasive evidence to the contrary has been proffered by Creality. Accordingly, the Court adopts Artec’s construction of “slide” which may include, as indicated in the specification, a traditional “slide-type,” a LCD-type slide, or “other device for creating structured light” as that phrase may be understood by a POSITA.

The third and central issue turns on *where* such a “slide pattern” is “located.” Again, the relevant language is “***slide pattern located on a slide surface.***” ’656 Patent at 8:17-21. This language is susceptible to some ambiguity in the sense that the “slide” and its physical “surface” itself could contain the information resulting in the “slide pattern” – for example, an etching a pattern into glass slide or a strip of transparent film containing a negative picture or pattern. In this way, the information containing the pattern is clearly located “on a slide surface.” This is the position advocated by Creality. Def’s Memo at 13, 24 (plain and ordinary meaning of this language indicates that the “slide pattern” must be located *on* “the surface of the slide.”). Creality takes this position because products do not use slides. *Id.* Therefore, Creality “seek[s] to ensure that any definition cannot be read on a lens with ***pattern located on the surface of the lens.***” *Id.* at 13 (emphasis in original).

Artec argues for a construction in which the “slide pattern” – *i.e.*, the plurality of coded elements – is not limited to existing or physically being located, contained on or within the slide

surface but can also be “electronically displayed *on*” the “slide’s” surface. Pl’s Memo at 8; First Markman Hr’g Tr. 29:4-8 (“The distinction here is whether or not this pattern has to literally be on top of a surface like a sticker”); *id.* 30:1-6. Artec argues that if an LCD-type slide is used the slide “pattern will not physically [be] ‘on the surface of a slide’” *See* Plaintiff’s Demonstrative Markman Slideshow (“Pl’s Markman Slides”) at 7.² Like at the movie theatre, a visual representation of a an image contained a single print on reel film may be projected and ultimately “located” on the silver screen but indeed the source of that image is imprinted on the film itself and located up in the projection booth.

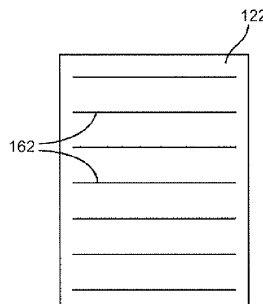
Even after the Markman hearing, it is unclear whether Artec argues the claim language to mean that a pattern may be projected from elsewhere and thus appear and technically be “located” on the “slide surface” or whether Artec asserts that LCD technology, if used as a “slide” in this device to not physically contain any coded element pattern information. First Markman Hr’g Tr. 30:1-6 (Artec’s counsel arguing that it’s definition of LCD would teach that “there’s nothing literally on top of the LCD display like some sticker, that something is just sitting on top of it. *It’s displayed on it in an electronic display of a pattern, not physically on the surface of a slide.*” (emphasis added))

Fortunately, the ’656 Patent contains other intrinsic evidence that is instructive to the Court. This evidence establishes that Creality’s position of plain and ordinary meaning controls. First claim 1 states that the plurality of the “coded elements” include “virtual line[s]” that are “*defined on said slide surface.*” ’656 Patent 8:40-43. “To help inform the court of the ordinary meaning of the words, a court may consult a dictionary, encyclopedia, or treatise.” *Anchor Wall Sys., Inc. v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1306 (Fed. Cir. 2003); *Phillips*, 415 F.3d at

² Both parties’ demonstrative slideshows used at the *Markman* hearing are on file with the Court and hereby incorporated into the record.

1322 (“Dictionaries or comparable sources are often useful to assist in understanding the commonly understood meaning of words and have been used both by our court and the Supreme Court in claim interpretation.”).³ According to the dictionary, the word “define” means to “to fix or mark the limits of; demarcate.” *Define*, Merriam-Webster.com (last accessed August 4, 2024). The word “on,” used as a preposition here, may mean “used as a function word to indicate position in or in contact with an outer surface” or “used as a function word to indicate the location of something.” *On*, Merriam-Webster.com (last accessed August 4, 2024). Together, this leads to the plain understanding based on the language of the specification that the “slide pattern” is fixed or demarcated on the outer surface of the slide.

Further, the ’656 Patent specification and the illustrative figures confirm such an understanding. Figure 1 demonstrate that, whatever medium may be used for a “slide,” the information comprising “slide pattern” – i.e., the “virtual lines” -- must exist or be contained *on* the “surface” of the slide and not be transmitted from another location. Figure 3, is recited as “an example of a slide and the corresponding image in a structured light triangulation system.”



³ The Court is cognizant that the Federal Circuit has long grappled with the appropriateness of the use of dictionaries in patent construction, especially where the construing court “has given greater emphasis to dictionary definitions of claim terms and has assigned a less prominent role to the specification and the prosecution history.” *Phillips*, 415 F.3d at 1319-24. However, here, no party claims special lexicographical meaning is applicable to “define” or “on” nor does the Court elevate those terms over the intrinsic evidence to import improper limitations or define them but rather to clarify the scope of the terms at issue.

The specification provides that the “slide” at issue corresponds to [122] while a “pattern of lines” is [162]. The specification then states

A slide 122 having a pattern of lines 162 performs amplitude modulation of the projected light from the light source In this example, the complexity of calculating the shape of the surface 110 resides in the complexity of identifying correspondence between lines 185 in the pattern in the captured image 140 and lines 162 in the pattern *in the slide* 122.

’656 Patent 4:19-30.

Such language, in its plain and ordinary meaning establishes that the slide must “have” the information, *i.e.*, coded the lines “in the slide.” That it, is the slide “includes or contains as part” the coded lines. *Have*, Merriam-Webster.com, (last accessed Aug. 4, 2024). It is axiomatic that the specification “is the single best guide to the meaning of a disputed term.” *Vitronics*, 90 F.3d at 1582. The specification dictates that the “slide pattern” must be “located” on the surface of the slide.

The Court adopts Creality’s position and deems that the information comprising the “slide pattern” must physically located or contained on within the “slide surface,” whatever medium the “slide” may be.

3. “a device for . . .”

The parties dispute the meaning of “a device for,” which appears in claim 1 of the ’656 Patent. In full part the claim recites:

. . . a device for capturing an image of said structured light pattern reflected on said object, **wherein said device for capturing an image comprises a device lens characterized by a device lens vertex;** and

’656 Patent 8:22-29 (emphases added).

a. Parties' Positions

The parties' proposed constructions are shown below:

Artec's Construction	Creality's Construction
a piece of equipment	This term is subject to 35 U.S.C. 112(f). Function = "capturing an image of said structured light pattern reflected on said object" Means = A camera with a photographic lens, having a vertex, a matrix radiation receiver, and a driver

Artec argues that, viewed in conjunction with the rest of the claim language itself and the specification, there is sufficient structure recited such that a POSITA, like its expert Dr. Sadeghi, would understand the plain and ordinary meaning a "device for means" simply means a "piece of equipment" and so means plus function treatment is not required. Pl's Memo 8-10. Creality argues that the term is subject to means plus function construction based on the prosecution history. *See* Defs' Memo at 15-18.

b. Analysis

1. Means Plus Function Applies

Artec "receives the benefit of the presumption that [the claim term] is *not* in means-plus-function format because it lacks the word 'means.'" *WSOU*, 2023 WL 6889033, at *4 (citing *Williamson*, 792 F.3d at 1349) (emphasis added). But, "merely because an element does not include the word 'means' does not automatically prevent that element from being construed as a means-plus-function element." *Williamson*, 792 F.3d at 1348.

"The Federal Circuit has made clear that even though a claim may not use the traditional 'means for' construction, certain 'generic terms such as 'mechanism,' 'element,' 'device,' and other nonce words that reflect nothing more than verbal constructs may be used in a claim in a

manner that is tantamount to using the word ‘means’ because they ‘typically do not connote sufficiently definite structure’ and therefore may invoke § 112, para. 6.” *Verint Sys. Inc. v. Red Box Recorders Ltd.*, 166 F. Supp. 3d 364, 376 (S.D.N.Y. 2016) (quoting *Williamson*, 792 F.3d at 1350). Here, “device for” is invoked as a nonce word as it contains no further structure beyond the functionary language that appears after it. Nonetheless, in order to rebut the presumption, Creality must “demonstrate[] that the claim term fails to ‘recite[] sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function’” to a POSITA. *Id.* (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed.Cir.2000)). Thus, the Court looks to intrinsic evidence to determine if nonetheless sufficient structure is recited.

First, the Court looks to the claim language itself. Read in full context, claim 1 recites that “the device for capturing an image” which “comprises a device lens characterized by a device lens vertex.” ’656 Patent 8:22-29. Artec proposes this language adds additional structure to a POSITA, like Dr. Sadeghi. Pl’s Memo at 14-15. However, “device lens” and “device lens vertex” are nowhere else further described in the specification. Moreover, as explained below, Artec’s own POSITA employed in patent prosecution, who was a POSITA in the field of optics, declared that that both of these terms were of insufficient structure to perform the function of “capturing an image.” *See infra*.

Looking to the specification, the ’656 Patent recites throughout that a possible embodiment of claim 1 might include a “camera”

The optical unit 102 includes a **camera 108 or other image detecting device for capturing** an image of the structured light 113 acting on the surface 110 of the object 111. In one or more embodiments, the camera 108 includes a lens 180 having a vertex 130, a matrix radiation receiver 128 and a camera driver 132. . . .

[In Figure 3] The camera 108 records the corresponding resulting captured image 140 of the structured light 113 acting on the surface 110. . . .

In one or more embodiments, the system 100 simplifies the task of detecting elements of structured light 113 in the image 140 captured by the **camera 108**

See e.g. '656 Patent at 3:30-35; 4:24-26; 5:3-5.

However, no evidence is proffered that the term “camera” as used in the '656 Patent is known to POSITA such that it connotes sufficient structure to “capture an image.” Dr. Sadeghi, an expert in computer graphics and 3D processing, geometry, and rendering, provides no opinion that he as a POSITA would commonly understand the term “camera” as used in the patent to have sufficient structure. Rather he focuses his analysis on dictionary definitions and the terms “device lens” and “device vertex.” Sadeghi Decl. ¶¶ 55-56.

The prosecution history of '656 Patent, namely in the *inter partes* review (“IPR”) proceedings, also provides sufficient evidence to rebut the presumption and supports a finding that means plus function should apply. *See Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1361 (Fed. Cir. 2017) (“Because an IPR proceeding involves reexamination of an earlier administrative grant of a patent, it follows that statements made by a patent owner during an IPR proceeding can be considered during claim construction . . . ”); *Glaxo Grp. Ltd. v. Ranbaxy Pharms., Inc.*, 262 F.3d 1333, 1336 (Fed. Cir. 2001) (“To determine the meaning of disputed claim terms, however, a construing court may consider the patent specification and the administrative record leading to patent issuance.”).

“[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Phillips*, 415 F.3d at 1317. Reviewing the IPR proceedings as to the '656 Patent here, it is clear that Artec originally contemplated the term “device for” to be construed as means plus

function. First, Artec’s own Preliminary Response to Creality’s petition for *inter partes* review (“PI’s IPR Memo”) as to the ’656 Patent, ECF 120-2, review represented to the Patent Trial and Appeal Board (“PTAB”) that Artec intended to use means plus function drafting:

Petitioner [*i.e.*, Creality] here failed to provide a construction under § 112 ¶6 for a term that is plainly a means-plus-function term and failed to satisfy 37 C.F.R. § 42.104(b)(3)

“Device for” invokes 112 ¶6. This term must be interpreted under § 112 ¶ 6 as a means-plus-function term because, like the nonce word “means,” the word “device” is a well-known nonce word, and the phrase is defined solely by its unction—here “for capturing an image of said structured light pattern reflected on said object.” . . .

Courts routinely find that § 112 ¶ 6 applies where, *as here*, limitations use the nonce word “device” and do not connote sufficient structure for the claimed function. . . .

When a claim limitation does not recite sufficient structure—*as is the case here*—the claim must be construed as a means-plus-function limitation

PI’s IPR Memo at 9-14 (citing *inter alia*, *Williamson*, 792 F.3d at 1350) (emphases added).

Further, Artec’s own POSITA expert at the IPR stage, David Aiken, who claimed expertise “in the field of optics, optical engineering, and optical systems development with extensive understanding of optical design,” also declared that:

In my opinion, the structure recited in the claim—“a lens characterized by a device lens vertex”—is ***insufficient structure*** to perform the function. A lens with a lens vertex on its own is not capable of performing the function of “capturing an image.” A POSITA would recognize that an image may pass through a lens, but the POSITA would know that a lens by itself cannot capture the image. Additional features and functionality would be needed to actually “capture” the image. There are many ways in which an image could be captured—for example through film or digitally using different approaches and device structures. . . .

As a result, it is my understanding that, the “device for” term here ***must be interpreted as a means-plus-function limitation***

Declaration of Dave Aikens In Support of Patent Owner’s Preliminary Response to Petition for Inter Partes Review Of U.S. Patent No. 7,768,656 (“IPR Decl.”) ¶¶ 4, 42, 45 (emphases added), ECF 120-3.

“A party is not entitled to a claim construction divorced from the context of the written description and prosecution history.” *Eon Corp.*, 815 F.3d at 1320 (cleaned up). Yet, this is exactly what Artec attempts at this juncture. Here at the claim construction stage, Artec’s expert Dr. Sadeghi contends that sufficient structure exists in the claim “device for” to avoid a means plus function construction that Artec initially advocated for before the PTO. However, Dr. Sadeghi’s declaration and lack of expertise in the relevant field provide little reason to credit him on this count. First, Dr. Sadeghi claims that structure is provided by relying on common dictionary definition of “device.” Sadeghi Decl. ¶ 53. Such “extrinsic evidence in general as less reliable than the patent and its prosecution history in determining how to read claim terms, for several reasons.” *Phillips*, 415 F.3d at 1318. To start, “extrinsic evidence by definition is not part of the patent and does not have the specification’s virtue of being created at the time of patent prosecution for the purpose of explaining the patent’s scope and meaning.” *Id.* Further, “extrinsic evidence consisting of expert reports and testimony is generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence.” *Id.* While of course “extrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes,” “conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court. Similarly, a court should discount any expert testimony ‘that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.’” *Id.* (quoting *Key*

Pharms. v. Hercon Labs. Corp., 161 F.3d 709, 716 (Fed.Cir.1998)). Here, Dr. Sadeghi simply opines that:

To expand on this, the specification of a “device lens” with a “lens vertex” inherently implies a certain geometrical configuration and optical properties, essential for focusing light and capturing clear images. This detail informs a person skilled in the art about the lens’s role in directing and focusing the reflected light pattern onto a sensor or a similar component within the device, which is crucial for accurately capturing the image. Such specificity in describing the lens attributes ensures that the device’s function—image capture of the structured light pattern—is technically supported and clearly understood within the framework of the patent claim, aligning with industry standards and expectations for such optical devices.

Sadeghi Decl. ¶ 55.

Such an opinion is devoid of any useful explanation by a POSITA as to the *structure* of what the “device for capturing an image” actually connote. It may be that the role of a lens is *important* to the stated function but provides no substance as to defining structure of the disputed term. Dr. Sadeghi’s declaration also fails to reconcile that intrinsic evidence from another POSITA in the relevant field of optics would understand that such a device could actually capture an image with just a “device lens” and “lens vertex.” *Phillips*, 415 F.3d at 1318 (“[A] court should discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent.”). Given this and the above evidence, the Court find that means plus construction applies.

2. Structure Disclosed in the Patent

Having found means plus function applies “the court must determine what structure, if any, disclosed in the specification corresponds to the claimed function.” *Williamson*, 792 F.3d at 1351–52. “Under this second step, structure disclosed in the specification is corresponding structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *Sony Corp.*, 924 F.3d at 1239 (citation omitted).

Here, Creality does not propose that the term is indefinite. Rather it contends that the function of “device for” is “capturing an image of said structured light pattern reflected on said object” while the means to do so, as drawn from the ’656 Patent, is “a camera with a photographic lens, having a vertex, a matrix radiation receiver, and a camera driver.” Opp. at 15.

Artec only argues here that it would be erroneous for the Court to limit the structure of the claim to requiring “matrix radiation receiver, and a driver” because they are “not necessary to perform the claimed function.” See Pl’s Memo at 9 This assertion is based solely on the Dr. Sadeghi’s extrinsic expert opinion. See *id.* (citing Sadeghi Decl. ¶ 57 (opining that the “capturing” function does not necessarily require those components”).

As previously noted, Dr. Sadeghi’s provides only extrinsic evidence and his expertise derives from his work as a “computer scientist and software engineer” who works in the fields of “graphics, appearance modeling, 3D geometry, 3D processing, and 3D rendering.” Dr. Sadeghi is admittedly not an expert in optics and optical engineering like Artec’s expert who proffered his expert opinion at the IPR stage.

Dr. Sadeghi claims “[t]he essential capturing process could be achieved with simpler means,” and without a matrix receiver and driver by “focusing solely on the lens’s role in gathering and focusing the reflected light to form an image.” Sadeghi Decl. ¶ 57. He continues to opine that “[t]he broader aspects of image processing or signal transmission, implied by the additional components, do not directly pertain to the fundamental act of capturing the image as claimed, thus suggesting that these elements would be superfluous within the context of this particular function.” *Id.* But, again, Dr. Sadeghi’s opinion about the “role” of a “lens” does not provide any explanation as to *why* a matrix receiver and driver are unnecessary, nor are any alternative examples given in which the device could function without those elements. Further, Dr. Sadeghi’s conclusory

statement that a matrix receiver and driver “do not pertain” to capturing an image is not actually explained either.

Lastly, Dr. Sadeghi’s opinion is in direct contradiction to the specification language and the prosecution history, which contemplates the need for “matrix radiation receiver, and a driver, and equivalents thereto.” See ‘656 Patent 3:30-38; IPR Decl. ¶ 44 (“It is my opinion that a POSITA would have recognized that the specification explains that the ‘lens 180 forms the image on the surface of the matrix radiation receiver 128,’ and that the ‘camera driver 132’ operates with the matrix radiation receiver to capture the image. This statement alone would indicate to a POSITA that *the “lens” is not “capturing” the image*, instead it acts to direct or otherwise ‘forms the image’ on another component — for example, a matrix radiation receiver.” (emphasis added)).

The Court construes the claim language “*a device for*” as follows:

- **Function**: capturing an image of said structured light pattern reflected on said object;
- **Means**: camera including a lens having a vertex, a matrix radiation receiver, and a camera driver, and equivalents thereto.

4. Construction of “a computing device for . . .”

The parties dispute the meaning of “a computing device for,” which appears in claim 1 of the ‘656 Patent.

The full claim phrase states:

computing device for determining a measurement relating to the shape of said object using a triangulation algorithm based on a correspondence between points in said slide pattern and said image, and . . .

’656 Patent 8:26-29 (emphasis added).

a. Parties' Positions

The parties' proposed constructions are shown below:

Artec's Construction	Creality's Construction
<i>a piece of equipment that calculates</i>	<p>This term is subject to 35 U.S.C. 112(f).</p> <p>Function = “for determining a measurement related to the shape of said object”</p> <p>Means = Indefinite for lack of computer algorithm</p>

Artec argues that a POSITA, like Dr. Sadeghi, would understand that the plain and ordinary meaning of the term “a computing device for” to mean “a piece of equipment that calculates” based on dictionary definitions. *See* Pl's Memo at 10 (citing Oxford English Dictionary and Sadeghi Decl., ¶ 62).

Creality argues that the “device” is equivalent to a nonce (i.e., “substitute”) word that has no structure and, therefore, the claim is subject to means plus function construction. Further, the prefix “computer” does not provide any additional structure. That being the case, Creality contends, the claim and ultimately fails for indefiniteness because the means for performing the recited function requires disclosure of an algorithm, which Artec has failed to fully disclose or otherwise provide for. Defs' Memo at 18-21 (citing *EON Corp. IP Holdings LLC v. AT&T Mobility LLC*, 785 F.3d 616, 621 (Fed. Cir. 2015)).

b. Analysis

“At the outset, [the Court] presume[s] that § 112 ¶ 6 does not apply here because the disputed limitation does not recite the word ‘means.’” *Dyfan*, 28 F.4th at 1370 (citing *Williamson*, 792 F.3d at 1348). “But the presumption can be overcome, and § 112, ¶ 6 will apply, if the challenger demonstrates that the claim term fails to recite sufficiently definite structure *or else* recites function without reciting sufficient structure for performing that function.” *Zeroclick*, 891

F.3d at 1007 (quotation mark and citations omitted) (original emphasis removed); *accord Rain Computing, Inc. v. Samsung Elecs. Am., Inc.*, 989 F.3d 1002, 1005 (Fed. Cir. 2021). That is, Creality must show, “by a preponderance of the evidence, that persons of ordinary skill in the art would not have understood the [“computing device for”] limitations to connote structure in light of the claim as a whole.” *Dyfan*, 28 F.4th at 1367.

“A limitation has sufficient structure when it recites a claim term with a structural definition that is either provided in the specification or generally known in the art.” *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1299 (Fed. Cir. 2014), *overruled on other grounds by Williamson*, 792 F.3d 1339. In undertaking this inquiry, the Court “look[s] to the specification, prosecution history, and relevant external evidence to construe the limitation.” *Apple*, 757 F.3d 1286, 1296.

Artec relies on the Federal Circuit decision in *Samsung Elecs. Am., Inc. v. Prisua Engineering Corp.*, to argue that a “computing device” does not fall under means plus function. 948 F.3d 1342, 1353 (Fed. Cir. 2020); *see* Second Markman H’rg Tr. 12:2-14:9. In *Prisua*, in which the Federal Circuit reviewed a PTAB agency action, the Federal Circuit held that “the term ‘digital processing unit’ is not a ‘means-plus-function’ limitation subject to analysis under section 112, paragraph 6.” 948 F.3d at 1353. In reaching this conclusion, the *Prisua* court first noted that the patent applicant “argued to the [PTAB], based on testimony from its expert (the inventor), that the digital processing unit recited in the claims is ‘an image processing device that people in the art are generally familiar with.’” *Id.* at 1354 (record citation omitted).

The *Prisua* court then determined that “[a]s used in the claims of the [subject] patent, the term ‘digital processing unit’ clearly serves as a stand-in for a ‘general purpose computer’ or a ‘central processing unit,’ each of which would be understood as a reference to structure in this case, not simply any device that can perform a particular function.” *Id.* (citing *Inventio AG v.*

ThyssenKrupp Elevator Ams. Corp., 649 F.3d 1350, 1359 (Fed. Cir. 2011)). “Moreover, claim 1 [of the subject patent] requires that the ‘digital processing unit’ be operably connected to a ‘data entry device’ such as a keyboard, which in turn is connected to other components. That portion of claim 1 constitutes further evidence of the structural nature of the term ‘digital processing unit,’ as used in the claim.” Ultimately, the *Prisua* court rejected the Board’s finding that the claim term “digital processing unit” was “simply a black box recitation of any structure capable of providing certain functions.” *Id.* 948 F.3d at 1354.

Prisua followed from a line of Federal Circuit precedent inquiring as to whether computer-related terms used in patent claims that were *not* recited using the word “means” nonetheless invoke means plus function treatment. Like in *Prisua*, those courts looked to the intrinsic evidence and expert POSITA testimony as necessary. From these cases several common evidentiary indicia arose to guide courts in the inquiry whether such computer terms contained sufficient structure. First, courts look to whether the intrinsic evidence provided in the patent provides for and/or describes any input-out mechanisms and/or interconnectivity between the subject claim term and the rest of the invention such that structure can be discerned. Put another way, such sufficient structure in a specification generally demonstrates “how the “[subject device]” is connected to and interacts with the other components of the system, what processes the “[subject device]” “performs, and what structural subcomponents might comprise the “[subject device].” *Media Rts. Techs., Inc. v. Cap. One Fin. Corp.*, 800 F.3d 1366, 1373 (Fed. Cir. 2015).

For example, the Federal Circuit has found that the claim term “circuit” has a known structural definition and that the patent described the circuit’s operation, including its input, output, and objective. *See Apple*, 757 F.3d 1286, 1299 (citing *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320-21 (Fed.Cir.2004)). “Similarly, in another case, the Federal Circuit found

that the [claim term] ‘connector’ had a known structural definition and that the specification described its operational requirements, including which claim elements it was connected to and how they were connected.” *Id.* (citing *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354 (Fed.Cir.2004)). “In both cases, we found the presumption against means-plus-function claiming was un rebutted.” *Id.*; *see also Samsung*, 948 F.3d at 1354 (“Moreover, claim 1 requires that the ‘digital processing unit’ be operably connected to a ‘data entry device’ such as a keyboard, which in turn is connected to other components. That portion of claim 1 constitutes further evidence of the structural nature of the term ‘digital processing unit,’ as used in the claim.”); *Inventio AG*, 649 F.3d at 1359–60 (“The claims recite that the *computing unit* is connected to the modernizing device and generates a destination signal for transmission to the modernizing device. The claims elaborate that the computing unit is connected to the floor terminals of the elevator system, and evaluates incoming call reports, destination floors, and identification codes to generate the destination signal for processing by the modernizing device. The written descriptions also indicate that the ‘computing unit’ connotes structure to skilled artisans. As the claim term implies, the written descriptions refer to the computing unit as a computer, where one of its functions is to store and execute a computer program product.” (emphasis added)), *overruled in other part by Williamson*, 792 F.3d 1339.

Looking to the '656 Patent as a whole, the specification the term computing device is described in one embodiment as follows:

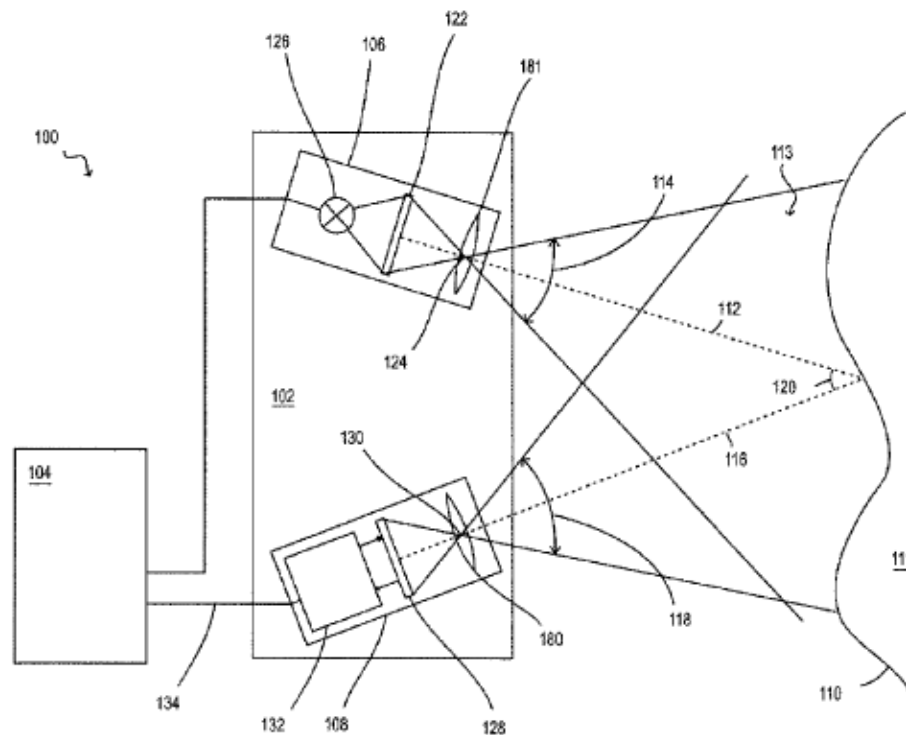


Fig. 1

The **computing device 104** analyzes the captured image received from the camera output 134 **to perform the desired calculations**, such as but not limited to the 3D shape of the surface 110 of the object 111, the distance to the object 111 and the orientation of the surface 110 being captured. The computing device 104 **can also to control the projector 106 and the camera 108** and their various components included therein.

'656 Patent 3:49-56 (emphases added).

Similarly, the specification also explains that:

The **computing system 104** may comprise a **general-purpose computer system** which is suitable for implementing the method for the 3D measurement of the shape of material objects in accordance with the present disclosure. The computing system 104 is only one example of a suitable computing environment and is not intended to suggest any limitation as to the scope of use or functionality of the invention.

'656 Patent 7:26-32.

In one embodiment, the **computing system 104** implements 3D shape measurement of objects by executing one or more computer programs. The **computer programs** may be stored in a memory medium or storage medium Such as a memory and/or ROM, or they may be provided to a CPU through a network connection or other I/O connection

'656 Patent 7:58-63.

Lastly, the specification teaches that:

Examples of well known **computing systems, environments, and/or configurations** that may be suitable for use with the invention include, but are not limited to, **personal computers**, server computers, hand-held or **laptop** devices, multiprocessor systems, microprocessor-based systems, programmable consumer electronics, networked PCs, minicomputers, mainframe computers, distributed computing environments that include any of the above systems or devices, and the like.

'656 Patent 7:37-44.

This intrinsic evidence provides sufficient recitation of structure to the term “computing device” and does not invoke means-plus-function analysis under 35 U.S.C. § 112 ¶ 6. “As used in the claims” of the ‘656 Patent, the term “computing device for” “clearly serves as a stand-in for a ‘general purpose computer’ or a ‘central processing unit,’ each of which would be understood as a reference to structure in this case, not simply any device that can perform a particular function.” *Prisua Eng’g Corp.*, 948 F.3d at 1354; *accord XR Commc’ns, LLC v. D-Link Sys., Inc.*, No. 17-CV-596(DOC)(JDE), 2022 WL 2288913, at *7 (C.D. Cal. Jan. 27, 2022), *report and recommendation adopted*, No. 17-CV-596(DOC)(JDE), 2022 WL 2291747 (C.D. Cal. Apr. 18, 2022).

Here, as stated in the claim itself, the “computing device” – be it an “laptop” or a” handheld computing device” like an iPhone – “receives” images from a connected camera and performs algorithmic triangulation calculations on the images received by and captured from the camera. These calculations are conducted by a computer program and CPU. The specification and

embodiments also give sufficient indication that the computing device may be connected via “a network connection or other I/O connection.” ’656 Patent 7:63.

“Moreover, the claims describe the objectives and operations of the system,” which is namely to use a method of algorithmic triangulation to determine the shape of an object’s surface that employs non-contact structured light. *CA, Inc. v. Netflix, Inc.*, 2:21-cv-00080-JRG-RSP, 2021 WL 5323413, at *28 (E.D. Tex. Nov. 16, 2021); *see* ’656 Patent at Summary. Further, the specification recites that the “triangulation algorithm” is based on “triangulation techniques known to those skilled in the art.” ’656 Patent 4:9-12. Creality presents no evidence that a POSITA would not know these techniques.

Finally, the Court notes this finding is accord with the construction of the term given by other district courts. *See, e.g., Netflix, Inc.*, 2021 WL 5323413, at *29. In fact, in one recent decision, a district court found that the term “computer” was not subject to means plus function even where the term “means” was included in the claim, relying on *Prisua*. *See Gesture Tech. Partners, LLC v. Huawei Device Co.*, No. 2:21-CV-40-JRG, 2021 WL 4760632, at *10 (E.D. Tex. Oct. 12, 2021) (“On balance, the presumption in favor of means-plus-function treatment for this “means” term is rebutted, and the Court hereby expressly rejects Defendants’ proposal that the disputed term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6.” (citing *Prisua*, 648 F.3d at 1354).

“In sum, the claims at issue differ from those that simply recite a generic means or mechanism, without further description in the remaining claim language or the specification. *Apple.*, 757 F.3d at 130. Creality has not rebutted the presumption of showing that means plus function does not apply and therefore rejects its proposed construction.

The Court finds that means plus function does not apply and the term “computing device” is given its plain and ordinary meaning.

5. “defined on said slide surface”

The parties dispute the meaning of “defined on said slide surface,” which appears in claims 1 and 12 of the ’656 Patent.

The full claim term language appears in claim 1, which recites the “system for the 3D measurement of the shape of a material object, comprising:”

a light projector for projecting a structured light pattern onto a surface of said object, wherein said light projector comprises a light source, *a slide with a slide pattern* located on a slide Surface, and a projector lens characterized by a projector lens vertex;

wherein at least a **first slide virtual line** and a **second slide virtual line are defined on said slide surface**, where said first slide virtual line is defined by an intersection between said slide Surface and a first plane passing through said projector lens vertex and through said device lens vertex, and said second slide virtual line is defined by an intersection between said slide surface and a second plane passing through said projector lens vertex and through said device lens vertex, and . . .

’656 Patent 8:15-48 (emphases added).

a. Parties Positions

The parties’ proposed constructions are shown below:

Artec’s Construction	Creality’s Construction
Plain and ordinary meaning, no further construction necessary as this term is included in phrases defined by the claim language.	The slide pattern exists on the surface of the slide

Creality argues that the construction of this portion of the claim term “rises and falls with” the Court’s construction of the previous term “a slide with slide pattern located on a slide surface.” First Markman H’rg Tr. 48:24-49:17. Again Creality’s primary argument, as it was in Part A.2, *supra*, is that it seeks a construction in which the virtual lines on the slide are “physically on the

slide.” *See id.* Artec maintains no further construction is necessary and further contends that Creality’s construction impermissibly imports limitations into this claim term because nowhere is this phrase related to a “slide pattern.” Pl’s Markman Slides at 15.

b. Analysis

“Because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims.” *Phillips*, 415 F.3d 1314; *In re Varma*, 816 F.3d 1352, 1363 (Fed. Cir. 2016) (“[T]he principle that the same phrase in different claims of the same patent should have the same meaning is a strong one, overcome only if it is clear’ that the same phrase has different meanings in different claims.”).

The Court agrees with Creality in that the Court’s prior construction of a “slide pattern a slide pattern located on a slide surface” forecloses Artec’s proposed construction here. As the Court explains above, the specification teaches that the virtual lines comprising the “slide pattern” must be contained on the surface of the slide medium and not projected onto the slide from another third source.

The Court concludes and adopts Creality’s position and construes the term to mean “[t]he slide pattern exists on the surface of the slide.”

6. “flashlight”

The parties dispute the meaning of “flashlight,” which appears in claim 8 of the ’656 Patent. The relevant claim language recites:

The system of claim 1 [i.e., a light projector for projecting a structured light pattern onto a surface of said object, wherein said light projector comprises a light source . . .], **wherein the light projector is a *flashlight source*.**

’656 Patent 9:20-21 (emphases added).

a. Parties' Positions

The parties' proposed constructions are shown below:

Artec's Construction	Creality's Construction
small portable light	a small portable light operated from self-contained cells

Artec argues that the “[t]he plain and ordinary meaning of ‘flashlight’ can be derived from dictionary definitions.” Pl’s Memo at 13 (citing (*See THE ILLUSTRATED DICTIONARY OF ELECTRONICS* (5th ed. 2001) (flashlight *See* FLASHLAMP, 2.; flashlamp ... 2. A small portable light operated from self-contained cells; a flashlight or lantern.”). Further, Artec contends that the use of “flashlight” is consistent with both the intrinsic evidence and Dr Sadeghi’s opinion of the meaning of the disputed term, which he bases off of that same technical dictionary definition. Pl’s Memo at 20; Sadeghi Decl. ¶ 71.

Creality’s argument is that “flashlight” must be limited to its dictionary definition as provided in Dr. Sadeghi’s declaration, and thus any flashlight must be limited to “operating from self-contained cells.”⁴ Creality argues that Artec’s definition impermissibly “expands” the limitation as contained in the patent to include any “small portable light.” The consequence of that construction, Creality advances, is that a flashlight would then “encompass matches, a lighter, a lightbulb, a cellphone and a digital projector.” Defs’ Memo at 25-26.

b. Analysis

The only dispute here is what the plain and ordinary meaning of “flashlight” means to a POSITA. The specification repeatedly recites that a “light source” is the means used by the

⁴ Creality initially contended the term “flashlight” was indefinite but in its brief and at oral argument acceded that “willing to agree that “flashlight” is not indefinite to the extent the structural reflected in the dictionary definitions are included as part of its construction.” Defs’ Memo at 26; Defs’ Markman Demonstrative Slides (“Defs’ Markman Slides”) Exhibit 6 at 2 (“*Defendants agree ordinary meaning should apply”). Thus the Court addresses the issue as last presented and argued before it.

invention to project light from the projector. For example, in one embodiment, “**the projector 106 is a slide projector including a light source 126** and a light modulating device 122 for modulating the light emitted from the light source 126.” ’656 Patent 3:9-12. Another embodiment proposes “[a] slide 122 having a pattern of lines 162 performs amplitude modulation of the **projected light from the light source 126** to project the pattern as structured light 113 from the projector 106 onto the surface 110 of the object 111.” *Id.*, 4:19-23.

However, neither of these portions of the specification further illuminate what the words “light source” actually *mean* in terms of structure to a POSITA or how the “light source” reconciles with the actual words used in the disputed claim, which specifically recites a “*flashlight* source.” ’656 Patent 9:20-21. That is, these specification provisions provide no additional information as to why the specific word “flashlight” was chosen in the claim limitation or what it means to a POSITA. “In all aspects of claim construction, the name of the game is the claim.” *Apple*, 757 F.3d at 1298 (cleaned up). It is the Court’s duty to construe the *claim* terms. The word was elected by Artec and necessarily has some meaning, but the specification does not support either parties’ position as to whether any “small portable light” (the portion of the claim language the parties do agree on) must have or contain self-contained cells (or not).

Thus, the Court turns to extrinsic evidence of Dr. Sadeghi’s declaration. *See Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 331–32 (2015) (“In some cases, however, the district court will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.”). Contrary to Creality’s position, it is clear that a POSITA like Dr. Sadeghi would not consider matches or a lighter equivalent to a “flashlight” in his area of the art. Nowhere in his declaration does Dr. Sadeghi support such a broad understanding. Rather,

Dr. Sadeghi himself relies on the Illustrated Dictionary of Electronics to conclude that the term means “small portable light.” Sadeghi Decl. ¶ 71. Dr. Sadeghi opines that

The term “flashlight” is well-recognized in the field, and its conventional meaning is easily ascertainable from standard definitions, such as —a small portable light operated from self-contained cells, a flashlight or lantern . . . [and that] This definition is consistent with intrinsic evidence.

Id.

As to the use of technical dictionaries in claim construction, the Federal Circuit has explained that they may be “especially” “helpful” in claim construction because

technical dictionaries, endeavor to collect the accepted meanings of terms used in various fields of science and technology, those resources have been properly recognized as among the many tools that can assist the court in determining the meaning of particular terminology to those of skill in the art of the invention. Such evidence, we have held, may be considered if the court deems it helpful in determining “the true meaning of language used in the patent claims.” *Markman*, 52 F.3d at 980.

Phillips, 415 F.3d at 1318 (citation omitted).

However, one last wrinkle remains. Dr. Sadeghi’s opinion as to the meaning of the term “flashlight” conspicuously omits the language “from self-contained cells” that was found in the technical dictionary definition cited by him and which he concedes is “*consistent with the intrinsic evidence.*” Sadeghi Decl. ¶ 71 (emphasis added). Instead, Dr. Sadeghi’s full and final contention is “that the term ‘flashlight’ is unambiguously defined and possesses a clear scope. I concur with the Plaintiff that it signifies a ‘*small portable light.*’” Sadeghi Decl. ¶ 72 (emphasis added). The Court must reject such an interpretation as at odds with the expert’s own prior testimony.

It makes no sense, and Dr. Sadeghi provides no explanation as to why a POSITA like himself, reviewing such a technical dictionary – a source compiled and accessible to all – would voluntarily read out a portion from the technical dictionary’s definition. Indeed, dictionaries

provide their own public notice function central to the patent law as they “endeavor to *collect the accepted meanings* of terms used in various fields of science and technology.” *Phillips*, 415 F.3d at 1318. For a POSITA to consult a dictionary, and then selectively read out an accepted meaning of the definition, without any further explanation as to why a POSITA should or would do so, is without basis in patent law.

Further, as the Court could consult the technical dictionary itself even without Dr. Sadeghi, and would encounter the same definition, the Court concludes that the dictionary definition which, Artec’s POSITA relied on initially, fills the gap as to the claim term “flashlight’s” plain and ordinary meaning.

The Court construes the claim term “flashlight” to mean “a small portable light operated from self-contained cells.”

B. The ‘129 Patent

In abstract, ’129 Patent claims an invention for “a combined object capturing system and display device and associated method are provided for capturing and measuring an object near a display device.” *See* ’129 Patent, Declaration of John E. Handy, Ex. 2, ECF 117-3.

1. “display device”

The parties dispute the meaning of “display device” which appears in claims 1 (a 3D measurement *system* claim) and Claim 10 (a *method* of 3D measurement claim) of the ’129 Patent. In relevant part claim 1 recites as follows:

A system for the 3D measurement of the shape of a material object, comprising:

a display device; and

at least one projection device for projecting a structured light pattern onto a surface of an object;

at least one detection device for capturing at least one image of the surface of said object, ;

a computing device for determining a measurement relating to the captured image;

wherein said display device provides a position and orientation for said object to take with respect to said at least one detection device prior to capturing the at least one image. . .

‘129 Patent 6:60-7:9 (claim 1).

Claim 10 recites in full:

A method for the 3D measurement of the shape of an object positioned near a display device, comprising:

projecting a structured light pattern from at least one projection device onto a surface of the object positioned near a display device;

capturing at least one image of the surface of said object with at least one detection device, where at least one of the captured images includes an image of the structured light pattern acting on the surface of said object, **wherein said display device provides a position and orientation for said object to take with respect to the at least one detection device prior to capturing the at least one image**; and

determining a measurement relating to the surface of said object.

’129 Patent 7:32-8:8 (claim 10).

a. Parties’ Positions

The parties’ proposed constructions are shown below:

Artec’s Construction	Creality’s Construction
a piece of equipment that displays information	<p>This term is subject to 35 U.S.C. 112(f)</p> <p>Function = Providing a position and orientation for said object with respect to the detection device prior to capturing an image.</p> <p>Means = Indefinite for lack of computer algorithm</p>

Creality reasserts its argument that, despite the absence of the word “means,” the word “device” is a well-known nonce word that does not connote sufficient structure in and of itself. And, again assuming means plus function applies, Creality maintains ’129 Patent fails for indefiniteness because means for performing the function discloses no algorithm for “providing a position and orientation of an object” is disclosed. Defs’ Memo at 26-28.⁵

Artec argues that the intrinsic evidence and dictionary definitions of “device” provides sufficient structure and, further, that the ’129 Patent specification makes clear that the “display device” can be a “combination of devices or software[.]” Pl’s Memo at 14-15 (citing Sadeghi Decl., ¶¶ 74-76).

b. Analysis

The Court again starts with the presumption the means plus function does not apply here as the word “means” is absent from the claim language in both claim 1 and claim 10. *Dyfan*, 28 F.4th at 1370. Thus, Creality must rebut the presumption by demonstrating that there is insufficient structure recited in the ’129 Patent for the specific term “display device.”

To support its construction, Artec points to the portion of ’129 Patent’s specification that recites:

[t]he display device 101 **may be any device** that displays information to a user or toward the object 111. The display device 101 may include, but is not limited to, a **computer monitor, an LCD, a desktop computer, a laptop computer, a television**, a portable or mobile telephone, a personal digital assistant, a handheld computing device, a remote terminal, **or any other type of display or device that may include a display**.

’129 Patent at 3:30-36 (emphases added); Pl’s Memo 14-15; *accord* Sadeghi Decl. ¶ 75-76.

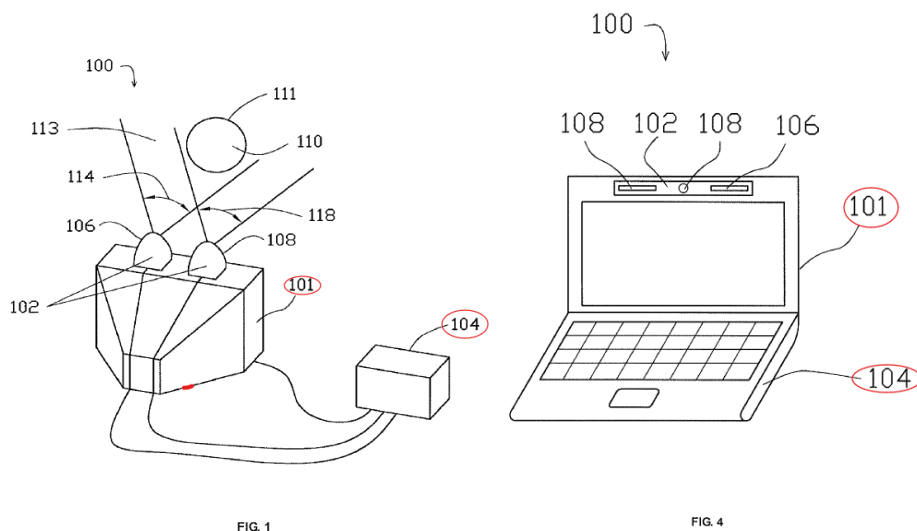
⁵ Creality also raises this same argument in construction of another sub-portion of disputed claim phrase: “said display device provides a position and orientation for said object to take with respect to said at least one detection device prior to capturing the at least one image,” which is further discussed below. *See infra* Part B.5.

Further,

[i]n one or more embodiments, at least one component of the object capturing system 102 may be fixably or removably attached or integrated into the *display device* 101.”

’129 Patent at 3:37-39.

The illustrative figures provided in the ’129 Patent indicate that “a computer or a computing device [10]4 will be referred to herein as being *connected to* or *associated with* the display device 101[.]” as reproduced below:



Lastly, Dr. Sadeghi also confirms that a POSITA would understand the term “display device” to have the same meaning as recited in the ’129 Patent specification. Sadeghi Decl. ¶¶ 75-76. No evidence is introduced by Creality to rebut this opinion.

The Court concludes the intrinsic evidence in the ’129 Patent recites sufficient structure to such that a POSITA would understand the term “display device.” *Cf. Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016) (“The claims at issue do not require any nonconventional computer, network, or *display components*, or even a non-conventional and non-generic arrangement of known, conventional pieces, but merely call for performance of the claimed information collection, analysis, and *display functions* “on a set of generic computer

components” and display devices. (cleaned up)) (patent eligibility decision); *Savvy Dog Sys., LLC v. Pennsylvania Coin, LLC*, No. 2023-1073, 2024 WL 1208980, at *4 (Fed. Cir. Mar. 21, 2024) (“Here, all that remain are generic and conventional computer components (e.g., a gaming terminal and touch *screen display*) that are used in a routine and conventional way”) (same); *see also* First Markman Hr’g Tr. 55:3-5 (Defense Counsel: “A display device in certain contexts can be not a means-plus-function if it’s for displaying a movie.”). Accordingly, the Court finds that the plain and ordinary meaning applies.

The core issue raised by Creality is whether the purported further functional limitation that the “display device” in the ’129 Patent is used to “provides a position and orientation for said [scanned] object to take” renders the term “display device” into a nonce word for “means.” However, that issue is more properly raised and addressed in another disputed construction further discussed below. *See infra* Part B.5. Nonetheless, the parties specifically put to the Court for construction the term “display device” as a standalone term. It is the Court’s “fundamental” duty to construe the words of claims as put to it to resolve the parties disputes. *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (“When the parties present a fundamental dispute regarding the scope of a claim term, it is the court’s duty to resolve it.”). Therefore, for the reasons explained further below *infra* Part B.5., Court concludes confirms that plain and ordinary meaning applies to the term “display device.”

The Court construes the term “display device” by its plain and ordinary meaning.

2. “projection device” / “at least one projection device for”

The parties dispute the meaning of “at least one projection device for,” which appears in claim 1 and claim 10 of the ’129 Patent. In relevant part the claim phrase for claim 1 recites: “A system for the 3D measurement of the shape of a material object, comprising: . . . **at least one**

projection device for projecting a structured light pattern onto a surface of an object; . . .”

’129 Patent 6:60-7:9 (Claim 1) (emphases added).

The relevant portion of claim 10 recites: “A method for the 3D measurement of the shape of an object positioned near a display device, comprising: projecting a structured light pattern **from at least one projection device onto a surface of the object positioned near a display device: . . .**” ’129 Patent 7:32-36 (claim 10) (emphases added).

a. Parties’ Positions

The parties’ proposed constructions are shown below:

Artec’s Construction	Creality’s Construction
at least one piece of equipment that projects	<p>This term is subject to 35 U.S.C. ¶ 112(f).</p> <p>Function – “for projecting a structured light pattern onto a surface of an object”</p> <p>Means = Indefinite for lack of disclosure of “light modulating device” in the alternative a slide projector with a light source and a light modulating device.</p>

Creality argues that the term “‘projection device’ itself doesn’t have an ordinary meaning” and that Dr. Sadeghi does not provide one as a POSITA. *See* First Markman Hr’g Tr. 61:2-8. Artec maintains that the specification provides sufficient structure to a POSITA like Dr. Sadeghi and that “it is unnecessary to further define ‘project,’ since it means to “make light or an image fall on a surface or screen.” Pl’s Memo 15-16 (quoting (COLOR OXFORD ENGLISH DICTIONARY (3d ed. 2006, reissued 2011) (“project *verb* 4.” definition)); *see* Sadeghi Decl. ¶¶ 45-48, 80-82 (quoting same dictionary definition).

b. Analysis

The Court starts with the presumption the means plus function does not apply here as the word “means” is absent from the claim language in both claim 1 and claim 10. *Dyfan*, 28 F.4th at 1370. Thus, Creality must rebut the presumption by demonstrating that there is insufficient structure recited in the ’129 Patent for the specific term “projection device.”

Creality contends that “device” here is a nonce word providing no structural meaning and thus is subject to means plus function. While this may be so standing alone, the prefix “projection” does add structure. *Cf. Williamson*, 792 F.3d at 135 (“While Williamson is correct that the presence of modifiers can change the meaning of ‘module,’ the presence of these particular terms does not provide any structural significance to the term ‘module’ in this case.”). Here, the intrinsic evidence in the patent indicates that “projection device [106] projects the structured light on the object” and that at least in one embodiment of the 129 Patent the light projector could be a “slide projector.” *See* ’129 Patent 5:6-7; 5:60-6:3. In another, “the projection device 106 is incorporated in the display device 101 itself, wherein the display device 101 projects the structured light 113.” ’129 Patent 6:19-22.

Dr. Sadeghi points out that

A POSITA might consider digital projectors, laser projectors, or LED projectors as falling within the scope of “projection devices,” provided they include essential elements that fulfill the function of projecting modulated light. Although the specification highlights a slide projector as an illustrative example, the broader language implies that the term “projection device” encompasses any apparatus designed to project light in a structured manner, which could be crucial in contexts like 3D scanning or image projection where specific light modulation is necessary.

Sadeghi Decl. ¶ 81.

The intrinsic evidence connotes sufficient structure for the claim term and thus presumption against means plus function has not been rebutted. *See, e.g., Personalized Media Commc’ns, LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 705 (Fed. Cir. 1998) (“Even though the

term ‘detector’ does not specifically evoke a particular structure, it does convey to one knowledgeable in the art a variety of structures known as ‘detectors.’ We therefore conclude that the term ‘detector’ is a sufficiently definite structural term to preclude the application of § 112, ¶ 6.”). However, as the claim term itself states that its function is the projection of “structured light,” the claim is necessarily limited by its own terms to projecting structured light.

The court construes the term “projection device for” to mean in its plain and ordinary meaning.

3. “detection device” / “at least one detection device for”

The parties dispute the meaning of “at least one detection device for,” which appears in claim 1 and claim 10 of the ’129 Patent.⁶ The relevant portion of claim 1 recites: “A system for the 3D measurement of the shape of a material object, comprising: **at least one detection device** for capturing at least one image of the surface of said object,” ’129 Patent 6:60-7:9 (Claim 1) (emphases added).

The relevant portion of claim 10, which is a method claim, recites: “A method for the 3D measurement of the shape of an object positioned near a display device, comprising: capturing at least one image of the surface of said object with **at least one detection device**,” ’129 Patent 7:32-38 (emphases added).

⁶ While the term “at least one detection device” and “detection device” are argued separately in the JCCC, at oral argument counsel agreed that the resolution of both constructions relied on one construction of “projection device” and were argued together. *See* Second Markman Hr’g Tr. 5:1-4.

a. Parties' Positions

The parties' proposed constructions are shown below:

Artec's Construction	Creality's Construction
"at least one piece of equipment that detects or identifies"	<p>This term is subject to 35 U.S.C. § 112(f).</p> <p>Function = capturing at least one image of the surface of said object</p> <p>Means = A camera with a photographic lens, having a vertex, a matrix radiation receiver, and a driver</p>

Creality again contends that means plus function applies to the term "detection device" and that the prefix "detection" does not provide sufficient structure to the claim language and neither does the intrinsic evidence in the '129 Patent. *See* Second Markman Hr'g Tr. 5:16-6:16. Artec argues that their construction follows the plain and ordinary meaning under the dictionary, which is also followed by its expert, Dr. Sadeghi. *See* Pl's Memo at 17-18. (citing Sadeghi Decl. ¶ 86). Artec separately argues that "detection device" as utilized in the claim 10 cannot be subject to means plus function because it is contained within a method claim. *See* Pl's Memo at 24.

b. Analysis

1. Means Plus Function Applies

The Court starts with the presumption the means plus function does not apply here as the word "means" is absent from the claim language in both Claim 1 and Claim 10. *Dyfan*, 28 F.4th at 1370. Thus, Creality must rebut the presumption by demonstrating that there is insufficient structure recited in the '129 Patent for the specific term "detection device." Here, the Court agrees with Creality that there is insufficient structure provided in the '129 Patent and thus means plus function treatment is warranted.

First, though the prefix "detection" is appended to "device" nothing else in the claim language asserted or not asserted but available in the rest of the patent provide it with further

structure. *See, e.g., Williamson*, 792 F.3d at 1351 (Fed. Cir. 2015) (“The prefix ‘distributed learning control’ does not impart structure into the term ‘module.’ These words do not describe a sufficiently definite structure.”); *Rain Computing*, 989 F.3d at 1006 (“Nor does the prefix ‘user identification’ impart structure because it merely describes the function of the module: to identify a user.”). “Thus, the claim language fails to provide any structure for performing the claimed functions.” *Rain Computing*, at 1006. Thus, the Court turns to the intrinsic evidence to determine whether sufficient structure is recited for “detection device.”

Looking to the intrinsic evidence, the Court considers whether the term “detection” as a “the name for structure, has a reasonably well understood meaning in the art.” *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880–81 (Fed. Cir. 2000). The closest the specification comes to reciting a known structure for “detection device” is the recitation that:

In at least one embodiment, the **detection device 108 may include a photographic lens 180 having a vertex 130, a matrix radiation receiver 128 and a driver 132.** The photographic lens 180 forms an image on the surface of the matrix radiation receiver 128. The driver 132 functions as an electronic signal management and processing unit which controls operation of the matrix radiation receiver 128 and may convert the image captured by the matrix radiation receiver 128 to another format (e.g., VGA, bmp, jpeg, etc.) as desired or required before the captured image is transferred to a computing device 104. **The detection device 108 may include a field of view 118 that encompasses a portion of the surface 110 of the object 111.** The projection device 106 may include a projector axis 112, and **the detection device 108 may include a detector axis 116,** Such that a triangulation angle 120 is the angle between the projector axis 112 and the detector axis 116.

‘129 Patent 6:23-38 (emphases added).

While this portion of the specification connotes structure in the sense that it explains what such sub-parts a “detection device” *might* contain in one particular embodiment, it provides no structural meaning as to how a POSITA would consider the term “detection device” on its own or that there are known examples of detection devices with these sub-features that are generally known to a POSITA. *But see Personalized Media Commc'ns, LLC*, 161 F.3d at 704–05 (“as noted

by the ALJ by reference to dictionary definitions, “detector” had a well-known meaning to those of *skill in the electrical arts* connotative of structure, including a rectifier or demodulator”). Unlike previously constructions in this order, *e.g.*, display device, no reference is made to as to *how* a POSITA in 3D graphics (*i.e.*, Dr. Sadeghi) or optics (*i.e.*, Mr. Aiken) would know that the term “detection device” means to a person of their skill in their respective art. Nor does the specification provide any insight beyond “very high level” and broad generalizations as to how the device works or interconnects the other components. *Williamson*, 792 F.3d at 1351 (means plus function rebutted where the “claim does not describe how the ‘distributed learning control module’ interacts with other components in the distributed learning control server in a way that might inform the structural character of the limitation-in-question or otherwise impart structure to the ‘distributed learning control module’ as recited in the claim.”).

Dr. Sadeghi’s declaration does little to assist Artec’s position. Dr. Sadeghi simply declares that: “The phrase ‘detection device’ inherently suggests a clear structure and connotes sufficient structure to a POSITA such as myself” and continues on to recite a general non-technical dictionary definition of “detect” defined as “discover or perceive the existence or presence of” Sadeghi Decl. ¶ 86 (quoting *The Oxford Color Dictionary & Thesaurus* (1996) and *Color Oxford English Dictionary*, 3rd edition, 2006, reissued 2011). Yet this tautology provides no actual structure from the view of a POSITA. It simply means that the piece of equipment recited in the claim must “discover or perceive” an object but does but does not explain what sort of structure is known to a POSITA performs such an act much less one that is generally known to a POSITA.

Accordingly, the Court determines the presumption is rebutted and means plus function applies to both claim 1 and claim 10. The Court rejects Artec’s argument that a because the disputed claim term is nested in a method claim in Claim 10 that such a placement precludes means

plus function treatment. *Rain Computing*, 989 F.3d at 1006 (“To the extent the examiners or the Patent and Trademark Office understood that a means-plus-function term cannot be nested in a method claim, they were incorrect.”). “Applicants are free to invoke § 112 ¶ 6 for a claim term nested in a method claim. [The Federal Circuit has] never held otherwise.” *Id.*

2. Structure Disclosed in the Patent

Construing a means-plus-function claim term is a two-step process. “The court must first identify the claimed function.” *Williamson*, 792 F.3d at 1351–52 (citing *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311 (Fed.Cir.2012)). Here, the Court identifies that the two claimed functions arising out claim 1 and claim 10. First, the “detection device” has a function of “capturing at least one image of the surface of said object.” ’129 Patent at 6:65-7:9 (Claim 1). Second, the “detection device” must also be capable of the function of “capture[ing] at least one image of the structured light pattern acting on the surface of said object.” *Id.* at 6:66-7:3.⁷

Second, “the court must determine what structure, if any, disclosed in the specification corresponds to the claimed function.” *Williamson*, 792 F.3d at 1351–52. “Under this second step, structure disclosed in the specification is corresponding structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *Sony Corp. v. Iancu*, 924 F.3d 1235, 1239 (Fed. Cir. 2019) (citation omitted). “Where there are multiple claimed functions, as we have here, the patentee must disclose adequate corresponding structure to perform all of the claimed functions. If the patentee fails to disclose adequate corresponding structure, the claim is indefinite.” *Williamson*, 792 F.3d at 1351–52 (citations omitted).

⁷ The claims in the ’129 Patent make clear there is “at least one device” which necessarily means there may be in some instances *only* one device, in which case the device would have to be able to perform both functions.

Here, the Court finds that the portion of the specification quoted above does provide at least some corresponding structure to the function of the “detection device.” Namely, the specification associates and “clearly links,” *Iancu*, 924 F.3d at 1239, a detection device with other components, namely “a photographic lens 180 having a vertex 130, a matrix radiation receiver 128 and a driver 132.” ’129 Patent 6:23-38. The specification makes clear that each of these components are required to “form” and “capture” an analog “image” of the surface of the scanned object and subsequently to “convert” it into another digital format such as “VGA, bmp, jpeg, etc.” *See id.* Thus, the claim term “detection device” does not fail for indefiniteness.

The Court construes the term “projection device” as subject to means plus function under § 112 ¶ 6 and further construes as follows:

- **Functions:** capturing at least one image of an object *and* at least one image of the structured light pattern acting on the surface of said object;
- **Means:** using a photographic lens, having a vertex, a matrix radiation receiver, and a driver as those terms are understood by a POSITA.

4. “a computing device for”

The parties dispute the meaning of “a computing device for,” which appears in claim 1 of the ’129 Patent. The relevant portion of the claim phrase recites: “A system for the 3D measurement of the shape of a material object, comprising: ***a computing device for determining a measurement relating to the captured image***” ’129 Patent 6:60-7:9 (emphases added).

a. Parties Positions

The parties' proposed constructions are shown below:

Artec's Construction	Creality's Construction
a piece of equipment that performs calculations	<p>This term is subject to 35 U.S.C. § 112(f)</p> <p>Function = “for determining a measurement related to the shape of said object”</p> <p>Means = Indefinite for lack of computer algorithm</p>

The parties' positions here largely rehash the arguments made for the same term in the '656 Patent. *See supra*, Part A.4 (“a computing device for”). Thus, the Court refers to and incorporates those arguments herein.

b. Analysis

At the outset, the Court “presume[s] that § 112 ¶ 6 does not apply here because the disputed limitation does not recite the word ‘means.’” *Dyfan*, 28 F.4th at 1370.

For the same reasons previously discussed in the disputed term “computing device” construed in the '656 Patent, the Court finds that Creality has not rebutted the presumption that means plus function does not apply here. *See supra* Part A.4(b). The specification recites that the “computing device” of the “object capturing system” may include a” general-purpose computer system which is suitable for implementing the methods for the 3D and 2D measurements of the shape of material objects in accordance with the present disclosure.” '129 Patent 4:4-8. The specification also recites “[e]xamples of well known computing systems, environments, and/or configurations that may be suitable for use with the invention include, but are not limited to, personal computers, server computers, hand-held or laptop devices, multiprocessor [s]ystems, microprocessor based systems, programmable consumer electronics, net worked PCs, minicomputers, mainframe computers, distributed computing environments that include any of the

above systems or devices, and the like.” *Id.* 4:15-23. Further, the specification recites other connections the computing device may have within the scope of the invention such as a “projection device and the detection device” as well as “display device.” *Id.* at 3:14-15; 4:44-49. Lastly, the specification contemplates that the image captured by the “matrix radiation receiver” and converted by the “driver” in the “detection device” can be “transferred to [the] computing device.” *See id.* at 6:23-32. The Court finds sufficient structure is recited and that Creality has failed to rebut the presumption against means plus function. *See Prisia*, 948 F.3d at 1354; *Netflix*, 2021 WL 5323413, at *28

The Court observes while the ’129 Patent is discrete from the ’656 Patent, they both nonetheless concern inventions comprising systems that measure objects, and which use computing devices for measurement; the computing device of ’656 Patent measures 3D surface shape of an object while computing device the ’129 Patent determines measurement “relating to the captured image” of an object. *Compare* ’656 Patent Abstract, *with* ’129 Patent at Abstract. The Court’s construction as to ’129 Patent accords with the Court’s earlier analysis and outcome for the same term in the ’656 Patent. *Cf. In re Varma*, 816 F.3d at 1363 (reciting that “the principle that the same phrase in different claims of the same patent should have the same meaning is a strong one, overcome only if ‘it is clear’ that the same phrase has different meanings in different claims.”); *Trustees of Columbia Univ. in City of New York v. Symantec Corp.*, 811 F.3d 1359, 1369 (Fed. Cir. 2016) (“We have previously held that where multiple patents “derive from the same parent application and share many common terms, we must interpret the claims consistently across all asserted patents.”).

The Court finds that means plus function does not apply, and the term “computing device” is given its plain and ordinary meaning.

5. “said display device provides a position and orientation for said object to take with respect to said at least one detection device prior to capturing the at least one image”

The parties dispute the meaning of “said display device provides a position and orientation for said object to take with respect to said at least one detection device prior to capturing the at least one image,” which appears in claim 1 and claim 10 of the ’129 Patent. The Court refers to Part B.1, *supra*, which fully lays out the claim phrases.

a. Parties’ Positions

The Court incorporates the outlines of the parties’ positions which are previously discussed at Part B.1, *supra*, and are reiterated in the parties’ construction submissions.

The parties’ proposed constructions are shown below:

Artec’s Construction	Creality’s Construction
the display device provides a position and orientation for the object to have prior to the at least one detection device capturing the at least one image	<p>This term is subject to 35 U.S.C. 112(f).</p> <p>Function = Providing a position and orientation for said object with respect to the detection device prior to capturing an image.</p> <p>Means = Indefinite for lack of computer algorithm.</p>

Creality maintains that in order for the display device for perform the function recited in the claim –“provid[ing] a position and orientation for said object to take” – requires a computer program and that “without specialized programming, none of them will provide the position or orientation of an object to take with respect to a 3D scanner. They have to be programmed . . .” *See* First Markman Hr’g Tr. 53:24-57:4. That is, the “providing” function that the “display device” ostensibly performs is some type of information that transfer accomplished by a computer algorithm. *See* First Markman Hr’g Tr. 55:7-11 (Defense Counsel: “[Y]ou’re providing a position

and orientation for an object to take. That’s a computer function and the specification doesn’t teach you how to do it.”).

Artec argued at oral argument that the term “‘providing’ is a not a programming function” because other claims and limitations in the ’129 Patent, as well as the patent’s intrinsic evidence, already provide for other means to make the contemplated calculations. First Markman Hr’g Tr. 57:24-58:2 (Plaintiff’s Counsel: “There is a computing device and a separate limitation that, in the specification, works with the display device to make those calculations.”).

Further, Artec argues in its brief that “[r]egarding the rest of the disputed term, the phrase ‘position and orientation for said object *to take* with respect to said at least one detection device prior to capturing the at least one image’ may be confusing to a jury.” Pl’s Memo at 22. “To clarify its scope, Artec’s proposed construction makes clear that ‘to take’ means ‘*to have*’ in this context.” *Id.* (emphasis added). “In other words, the display device provides the object’s starting position and orientation prior to measuring the 3D surface shape of an object.” *Id.* (citing Sadeghi Decl., ¶ 98).

b. Analysis

As recited earlier, means plus function is presumed not to apply to this claim as the word “means” does not appear in either claim 1 or claim 10. *See supra* Part B.1. Thus, it is Creality’s burden to demonstrate that the claim fails to “recite sufficiently definite structure.” *Williamson*, 792 F.3d at 134.

A court must look to the patent in the “context in which it was used by the inventor.” *Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d at 1320 (citation and quotation marks omitted). The Court begins with the words in the claim, as it “is the *claims*, not the written description, which define the scope of the patent right.” *Williamson*, 792 F.3d at 1346 (quoting

Laitram Corp. v. NEC Corp., 163 F.3d 1342, 1347 (Fed.Cir.1998)) (quotation marks omitted and emphasis in original).

Here, the claims explicitly recite that the “display device *provides* a position and orientation for said object to take.” ’129 Patent 6:60-7:9 (emphasis added). Further, claim 1 contains other limiting language; namely, that invention separately provides for “a computing device for determining a measurement relating to the captured image.” ’129 Patent 7:4-5. A “computing device” is also tasked with “compar[ing] measurement.” *Id.* 7:24-25. Thus, to read the “display device” as a device that *itself* employs an algorithm for position and orientation would be incongruous in view of the claims of the patent as a whole as it would import a limitation already provided for elsewhere, namely the “computing device.”

Looking to other intrinsic evidence, “[a] limitation has sufficient structure when it recites a claim term with a structural definition that is either provided in the specification or generally known in the art.” *Apple*, 757 F.3d at 1299. “By contrast, if the claim merely recites a generic nonce word and the remaining claim language, specification, prosecution history, and relevant external evidence provide no further structural description to a person of ordinary skill in the art, then the presumption against means-plus-function claiming is rebutted.” *Id.*

Turning to the specification, several relevant portions of the ’129 Patent recite:

In one or more embodiments, where the object 111 is associated with a user of the display device 101, **the reference position and/or the reference orientation provided by the display device 101 may correspond to a position and/or an orientation associated with the use of the display device 101.** For example, where the object 111 is a face of a user of the display device 101, the reference position and/or the **reference orientation provided by the display device 101 may be the position and/or the orientation at which the user would maintain its face during operation** of the display device 101.

’129 Patent 4:61-66 (emphases added).

The display device 101 may provide a reference position and/or a reference orientation for the position and orientation of object 111. For example, an object 111 may be **positioned adjacent to a display portion** or screen of the display device 101 and **oriented such that the surface 110 to be analyzed by the object capturing system 102** is directed toward the display portion of the display device 101.

'129 Patent 3:49-55 (emphases added); *see also* Figure 1 of specification.

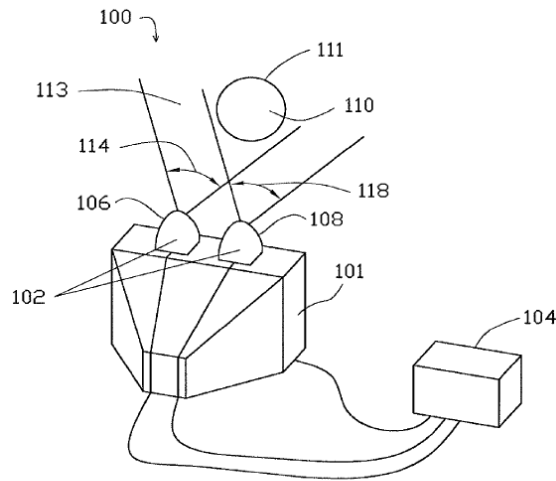


FIG. 1

Artec and Dr. Sadeghi, a POSITA, explain, “[t]he specification establishes that the display device provides the object’s starting position and orientation prior to measuring the 3D surface shape of an object.” Sadeghi Decl. ¶ 98. Put another way, the intrinsic evidence provides sufficient structure insofar as it explains that what the display device is doing or “providing” is a reference point in three dimensional space for the scanned object to “have,” as Artec construes it. This is reinforced by the extrinsic evidence that that an accepted dictionary definition of “position” includes “the point or area occupied by a physical object.” *See* Position, Merriam-Webster, (last visited July 31, 2024.); *see also* *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 805 (Fed. Cir. 2007) (a POSITA’s view is not always needed in the case “the application of the widely accepted meaning of commonly understood words.”).

To the extent further ambiguity remains, the Court “need not attempt the impossible task of resolving all questions of meaning with absolute, univocal finality.” *Eon Corp.*, 815 F.3d at 1318. At this junction, Creality has argued for a construction of means plus function. A presumption against means plus function applies and Creality has not rebutted that presumption accordingly plain and ordinary meaning applies. Further, the Court agrees that Artec’s reading substitution “to have” in the place of “to take” is consistent with the evidence in the patent without expanding claims or importing limitation and is also extrinsic evidence noting that to “take” connotes possession or adoption. *See* “Take”, Merriam-Webster, (last visited July 31, 2024)(“to adopt, choose, or avail oneself of for use: such as”; “to move onto or into : move into position on”).

The Court construes the term in its plain and ordinary meaning to mean “the display device provides a position and orientation for the object **to have** prior to the at least one detection device capturing the at least one image.”

6. “positioned near”

The parties dispute the meaning of “positioned near,” which appears in claim 10 of the ’129 Patent. The relevant claim phrase of claim 10 recites:

A method for the 3D measurement of the shape of an **object positioned near a display device**, comprising:

projecting a structured light pattern from at least one projection device
onto a surface of the object positioned near a display device;

’129 Patent 7:32-8:8 (emphases added).

a. Parties’ Positions

The parties’ proposed constructions are shown below:

Artec’s Construction	Creality’s Construction
positioned close to	Indefinite

Artec argues a POSITA would understand the meaning of the word “near” as used in the claim. They point to Dr. Sadeghi’s declaration in which he states that, as a POSITA, the term “positioned near” means “well within the range of projection and detection devices.” Sadeghi Decl. ¶ 102. “In light of the ’129 Patent specification, a POSITA would recognize that —near does not denote a precise measurement. Instead, ‘near’ refers to a proximity between an object surface and the display device that *facilitates effective scanning* by the object capturing system.” Sadeghi Decl. ¶ 102 (emphasis added). Dr. Sadeghi also points to Figure 1 and Figure 2 in the ’120 Patent which illustrate the term “near.” *Id.* (citing ’129 Patent 2:19-22; *id.* 2:23-26; *id.* 3:1-3). At oral argument, plaintiff’s counsel conceded that

And so positioned near is simply positioned close to. Our expert, Dr. Sadeghi, testified in his declaration that he understands in the context of the patent specification that near refers to a proximity between the surface of an object and the display device that facilitates effective scanning by the object capturing system. In other words, it has to be near, can’t be all the way across the room for there to be a sufficient 3D rendering made.

Second Markman Hr’g Tr. 24:12-19.

Creality takes the position that the term “near” is “impenetrabl[y]” ambiguous. Defs’ Memo at 37-38. Creality continues:

There is no definition to what is “near” in the claim and is instead, entirely subjective. The specification is of no aid and instead compounds the ambiguity. In each instance in which the term “near” is used within the specification of the ’129 Patent, it provides no information regarding the parameters of the term “near.” The figures of the specification are in the context of an implementation in which a projector (106) and camera (108) are placed either directly on top of or integrated into the display (101)

Id. at 37.

Both parties provide caselaw supporting their positions. *See* Pl’s Memo at 25 (collecting cases); Defs’ Memo at 36. Both in its brief and at the *Markman* hearing Creality relied on *In re*

Neurografix ('360) *Pat. Litig.*, 201 F. Supp. 3d 206, 222 (D. Mass. 2016) as the case “directly on point.” Second Markman Hr’g Tr. 28:19-20; *see* Defs’ Memo at 36.

b. Analysis

The parties agree that the sole issue here is the legal issue of whether the term fails for definiteness as the word “positioned near” is a term of degree. *See* Second Markman Hr’g Tr. 23:22; 28:10-13 (Defense Counsel: “It does have a plain meaning. We’re not arguing that no one would know what the word means. We’re just arguing where’s the outer bounds of that objectively.”).

The definiteness requirement of a patent is provided for in paragraph 2 of 35 U.S.C. § 112, which states that a patent’s specification “shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as [the] invention.” The Supreme Court has interpreted paragraph 2 to “require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with *reasonable certainty*.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 911 (2014) (emphasis added). “The definiteness requirement, so understood, mandates clarity, while recognizing that absolute precision is unattainable.” *Id.*; *see Accentra, Inc. v. Staples, Inc.*, 500 F. App’x 922, 929 (Fed. Cir. 2013) (“The definiteness requirement seeks to ensure that the claims delineate the scope of the invention using language that adequately notifies the public of the patentee’s right to exclude.” (quotation mark and citation omitted)).

“To do so does not require absolute clarity or precision in claim language; this court has ruled that claims are not invalid for indefiniteness unless they are not amenable to construction or ‘insolubly ambiguous.’” *Accentra, Inc.*, 500 F. App’x at 929–30. “Overcoming the presumption of patent validity, therefore, demands clear and convincing evidence that ‘a skilled artisan could

not discern the boundaries of the claim.” *Id.* (quoting *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed.Cir.2008)).

As stated earlier, “[n]ear’ is a word whose meaning is dictated by context.” *Id.*; see *Neurografix*, 201 F. Supp. 3d at 222. (“The preposition ‘near’ signifies physical proximity and is a term of degree that is susceptible to subjective interpretation.”). The Federal Circuit has “previously held that the term ‘near’ is not indefinite when used to denote a particular location and when the context does not create insoluble ambiguity.” *Accentra, Inc.*, 500 F. App’x at 930 (citing *Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1348–49 (Fed.Cir.2010); *Young v. Lumenis, Inc.*, 492 F.3d 1336, 1345–47 (Fed.Cir.2007)). In analyzing the term “positioned near,” other courts have rejected indefiniteness arguments where they have found that the “specification provides sufficient context for a person of ordinary skill in the art to understand the disputed terms with ‘reasonable certainty.’” *Innovative Display Techs. LLC v. Hyundai Motor Co.*, No. 2:14-CV-201(JRG), 2015 WL 2090651, at *17 (E.D. Tex. May 4, 2015) (quoting *Nautilus*, 572 U.S. at 909-10).

Here, on balance, the specification, illustrative Figures 1 and 2, and Dr. Sadeghi’s declaration, is sufficient for a POSITA to understand the term “positioned near” with “reasonable certainty.” *Nautilus*, 572 U.S. 910. See, e.g., *PM Holdings, LLC v. Heart of Texas Surgery Ctr., PLLC*, No. 6:21-CV-00644(ADA), 2022 WL 1230272, at *6 (W.D. Tex. Apr. 26, 2022) (“The Court finds that, in the context of the specification and Figures 1 and 2, the term ‘near’ ‘inform[s] those skilled in the art about the scope of the invention with reasonable certainty.’” (quoting *Nautilus*, 572 U.S. at 910)).

First, the demonstrative illustrative figures used in the specification show that the object to be measured, represented at [111]), must be in a “particular location,” *Accentra, Inc.*, 500 F.

App'x at 930. Namely, the specification teaches that the object and its surface is positioned in *front* of the display device.

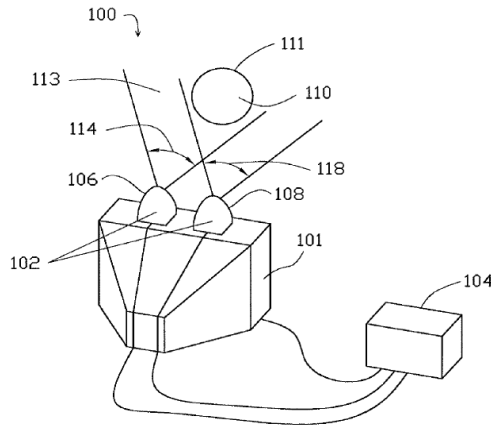


FIG. 1

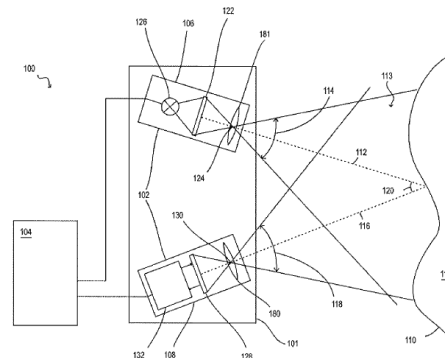


FIG. 2

Second, the claim language itself and the specification consistently places the term “positioned near” in context of the “display device.” See ’129 Patent (Abstract: “An combined object capturing system and display device and associated method are provided for capturing and measuring an object *near a display device*”); *Id.* 1:52-54 (“According to embodiments of the present disclosure, there is provided a method for capturing an object *near a display device* . . .”).

Further, Dr. Sadeghi, as POSITA, avers he understands that from “examination of the claim language alongside pertinent intrinsic and extrinsic evidence” that the term “near” would be “understood by a POSITA, such as myself, to mean well within *the range* of projection and detection devices.” Sadeghi Decl. ¶ 101-02. Thus, Dr. Sadeghi opines that “‘near’ refers to a proximity between an object surface and the display device that facilitates effective scanning by the object capturing system” and that “[t]his interpretation is consistent with intrinsic evidence.” *Id.* Accordingly, Dr. Sadeghi “contend[s] that the term ‘positioned near’ is understood by a POSITA with reasonable certainty.” Sadeghi Decl. ¶ 102. The Court finds this evidence sufficient

here. *Cf. Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1382 (Fed. Cir. 2015) (on remand) (“In relevant part, we noted an ordinarily skilled artisan would be able to determine this language requires the spaced relationship to be neither infinitesimally small nor greater than the width of a user’s hands.”); *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1260 (Fed. Cir. 2014) (“When a claim term depends solely on the unrestrained, subjective opinion of a particular individual purportedly practicing the invention, *without sufficient guidance in the specification* to provide objective direction to one of skill in the art, the term is indefinite.”).

Creality complains that the claim language and Dr. Sadeghi’s declaration is unhelpful in clarifying the objective bounds of language “positioned near” because his declaration does not provide an approximate measurement. Defs’ Memo at 37. The problem for Creality thus becomes that “for infringement, in the context of the accused products, Plaintiff urges the display could be anywhere in relation to the scanner.”⁸ *Id.* However, defendants provide no other evidence to rebut this extrinsic POSITA evidence except their attorney argument that such a term sets no “outward objective boundary from which a person of skill in the art or even a lay person could tell.” Second Markman Hr’g Tr. 26:25-27:4 (“What’s positioned near? Objectively how could a client know whether they’re infringing or not?”). However, it is Creality burden at the claim construction stage

⁸ Oral argument revealed that the gravamen of Creality’s concern was that Artec was attempting to use “advantages of changes in technology, because now things communicate via Wi-Fi” such that the “[t]he relative closeness of the display device to the object being scanned is entirely irrelevant to the scanning and to the effect of scanning.” Second Markman Hr’g Tr. 25:23-26:7. This would lead to concerns about whether competing devices were infringing. For example, at the Markman hearing the following colloquy occurred:

DEFENSE COUNSEL: So if a client calls and says hey, my display device can communicate with the scanner using Wi-Fi, I don’t have to put it anywhere close, would it infringe?

THE COURT: And we say well, is it positioned near?

DEFENSE COUNSEL: Yes, that’s what they would say. What do they say positioned near means? Look at their expert declaration. That’s what we rely on. He says, it means it helps effective scanning. The display device doesn’t scan. 101 is the display. 108 is the scanners. The scanners are separate from the display device.

Second Markman Hr’g Tr. 25:13-22.

to bring forth clear and convincing evidence that the term suffers from indefiniteness and the Federal Circuit has reiterated that “[a]ttorney argument is no substitute for evidence.” *Enzo Biochem, Inc. v. Gen-Probe, Inc.*, 424 F.3d 1276, 1284 (Fed. Cir. 2005).

While the specification teaches that in some embodiments that the “object capturing system” – *i.e.*, the projector and image detector – “may be fixably or removably attached or integrated into the display device 101” ’129 Patent 3:36-44, it does not get around the fact that the Artec is limited by its own elected language employed in the actual *claims* of the ’129 Patent, which includes the express limitation the object to be “positioned near” the *display device*, even if the scanning system was located across the room or across the Earth (however, that would work). As Dr. Sadeghi’s declaration suggests a POSITA understands that certain types of projectors and detectors may be used in such an invention that there is exists some inherent limit on their efficacy on their ability to perform those functions, *e.g.*, project structured light onto an object. *See, e.g.*, ’129 Patent 3:1-3. Creality has proffered no evidence to the contrary. And, in any case, the Court’s duty is to construe the claim terms presented and “a sound claim construction need not always purge every shred of ambiguity.” *Eon Corp.*, 815 F.3d at 1318.

This case is distinguishable from *Neurografix* because that court found “*nothing* in the [] patent sheds light on the limits of proximity required by the ‘near’ term[.]” 201 F. Supp. 3d at 223. Rather, like in *PM Holdings*, the Court concludes “on balance, the specification provides sufficient context for a person of ordinary skill in the art to understand the disputed terms.” 2022 WL 1230272, at *6 (rejecting indefinite argument for term “near”).

c. The Court’s Construction

The Court concludes that the Defendants have not proven the term “near” to be indefinite by the elevated “clear and convincing evidence” standard. *See PM Holdings*, 2022 WL 1230272,

at *6. “The Court therefore hereby expressly rejects Defendants’ indefiniteness argument, and no further construction is necessary.” *Id.*

C. The ‘357 Patent

In abstract, ’357 Patent claims an invention for a “three-dimensional scanner with data collection feedback.” *See* ’357 Patent, Ex. 3 to Declaration of John E. Handy, ECF 117-4.

1. “quantity of data” / “quantity of the first data”

The parties dispute the meaning of “quantity of data” and “quantity of the first data” which both appear multiple times in claim 11 of the ’357 Patent. Both the in their briefing and at the *Markman* hearing the parties agreed that these terms should be construed consistently and that same way and that the relevant word at issue was “quantity.” *See* Second Markman Hr’g Tr. 39:4-10.

The relevant portion of Claim 11, which is a method claim, recites as follows:

method, comprising:

at a 3D scanner that includes one or more optical sensors:

scanning, using the one or more optical sensors, an object having a surface, **wherein the scanning generates first data** corresponding to a three-dimensional (3D) shape of the surface of the object;

for each of a plurality of respective portions of the surface of the object, determining **whether a quantity of the first data meets a predefined threshold that corresponds to a quantity of data needed to reconstruct the 3D shape** of the portion of the surface of the object to a predefined accuracy;

after determining, for each respective portion of the plurality of portions of the surface of the object, whether the **quantity of the first data** meets the predefined threshold that corresponds to a quantity of data needed to reconstruct the shape of the portion of the surface of the object to the predefined accuracy, further scanning the object using the one or more optical sensors, wherein the **further scanning generates second data corresponding to the 3D shape** of the surface of the object; and

discarding at least a portion of the second data, wherein the discarded portion of the second data corresponds to respective portions of the surface

of the object for which the **quantity of the first data met the predefined threshold.**

'357 Patent 23:25-51 (emphases added).

a. Parties' Positions

The parties' proposed constructions are shown below:

Artec's Construction	Creality's Construction
Plain and ordinary meaning, no further construction necessary because this term is defined by the claim language	Amount of the first data

Creality argues that while “quantity” is the term used in the claim 11 itself is acceptable, Artec seeks to impermissible import another modifier – “quality” – into the claim and that any synonymous treatment of quantity and quality is impermissible. *See* Defs’ Markman Slides at Exhibit 13 at 2 (framing the issue as “Whether the bounds of the phrase ‘quantity of the first data’ can also encompass ‘quality’ of the first data). This argument derives from the fact that the specification and the illustrative figures repeatedly uses the word “quality” next to “quantity.” *See, e.g.,* '357 Patent 1:66-2:1 (“In some embodiments the device has a display that provides feedback (e.g., while scanning an object) indicating a *quality or* quantity of data acquired (e.g., 3D data).” (emphases added)); *id.* 18:66-19:7 (“In some embodiments, scanner 100 determines (624) whether the *at least one of quantity or quality of data* meets a pre-defined shape.” (emphasis added)); *see also* Figure 4A-F; Figure 6B, Figure 7. Creality therefore seeks a construction where “quantity” is unambiguously construed to exclude quality. To do so, Creality proposes that the term should be construed to include word “amount” as one Creality believes that clears up any ambiguity arising from the specification, should the issue of infringement get to a jury. Defs’ Memo at 41.

Artec maintains that no further construction is necessary and the plain and ordinary meaning applies. Pl’s Memo at 30-31.

b. Analysis

At the Markman hearing, the parties agreed that the plain meaning of “quantity of data” was acceptable. *See* Second Markman Hr’g Tr. 41:19-25.⁹ However, out of an abundance of caution, the Court reiterates independently why this must be so. Here, the intrinsic evidence contained the prosecution history of the ‘357 Patent is of critical significance in determining the meaning of this claim. *Personalized Media Commc’ns, LLC v. Apple Inc.*, 952 F.3d 1336, 1340 (Fed. Cir. 2020) (“The prosecution history, in particular, may be critical in interpreting disputed claim terms because it contains the complete record of all the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the scope of the claims.” (cleaned up)). Importantly, “an applicant’s amendment accompanied by explanatory remarks can define a claim term by demonstrating what the applicant meant by the amendment.” *Id.*

In the original patent application of the ‘357 Patent, Artec explicitly claimed the method of claim 11 (which at that point was actually housed in claim 12) using the language “for each of a plurality of respective portions of the surface of the object, determining whether a **quantity or quality** of the first data. . . .” *See* ‘357 Patent Application dated June 23, 2020, at 33, Ex. 10 to Opp., ECF 120-11 (PageID 1656).

⁹ The follow confirmation is on the record:

THE COURT: Okay. So plain meaning quantity of the first data, and that is quantity of the first data Patent ‘357, claim 11. And that would be quantity of data is the quantity of data, plain meaning of quantity. We’re in agreement with that?

PLAINTIFF’S COUNSEL: Yes, Your Honor.

DEFENSE COUNSEL: Yes, Your Honor.

Second Markman Hr’g Tr. 41:19-25.

On July 27, 2020, the PTO, in relevant part, rejected the claim on anticipation grounds, *see* 35 U.S.C. 102(a)(1). *See* PTO Office Action Summary dated July 27, 2020 at 10 (citing Page et al. (2018/0227570)), Ex. 11 to Opp., ECF 120-12.

In response to the PTO's rejection, Artec amended the language in the subject claim by expressly striking the word quality to avoid conflict with the Page prior art. *See* Artec Amendment dated October 30, 2020, at 5, 10 Ex. 8 to Opp., ECF 120-9.

12. (Currently Amended) A method, comprising:
 - at a 3D scanner that includes one or more optical sensors:
 - scanning, using the one or more optical sensors, an object having a surface, wherein the scanning generates first data corresponding to a three-dimensional (3D) shape of the surface of the object;
 - for each of a plurality of respective portions of the surface of the object, determining whether a quantity ~~or quality~~ of the first data meets a predefined threshold that corresponds to a quantity ~~or quality~~ of data needed to reconstruct the 3D shape of the portion of the surface of the object to a predefined accuracy;
 - after determining, for each respective portion of the plurality of portions of the surface of the object, whether the quantity ~~or quality~~ of the first data meets the predefined threshold that corresponds to a quantity ~~or quality~~ of data needed to reconstruct the shape of the portion of the surface of the object to the predefined accuracy, further scanning the object using the one or more optical sensors, wherein the further scanning generates second data corresponding to the 3D shape of the surface of the object; and
 - discarding at least a portion of the second data, wherein the discarded portion of the second data corresponds to respective portions of the surface of the object for which the quantity ~~or quality~~ of the first data met the predefined threshold.

On November 17, 2020, the PTO issued a Notice of Allowability for the '357 Patent clearing the way for its issuance. *See* Notice of Allowability dated Nov. 17, 2020, Ex. 9 to Opp, ECF 120-10.

While the specification still recites the “quantity or quality,” that limitation – which was already forfeit by Artec in gaining the issuance of the '357 Patent – cannot be imported into the claim at a later stage of this litigation. Artec is deemed to have disavowed “quality” from any reading of quantity. *Shire Dev., LLC v. Watson Pharms., Inc.*, 787 F.3d 1359, 1364–65 (Fed. Cir. 2015) (“[W]here the patentee has unequivocally disavowed a certain meaning to obtain his patent, the doctrine of prosecution disclaimer attaches and narrows the ordinary meaning of the claim

congruent with the scope of the surrender.” (citation omitted)); *see also Ekchian v. Home Depot, Inc.*, 104 F.3d 1299, 1304 (Fed.Cir.1997) (“since, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover, he is by implication surrendering such protection”).

The Court finds that the term “quantity” as used in claim 11 is governed by its plain and ordinary meaning and no further construction is necessary.

D. Stipulated and Agreed Upon Terms

The parties have agreed and so stipulated to the following constructions to previously disputed claim terms. The Court thus finds these issues resolved and the following construction binding on the parties.

1. “a 3D scanner” (‘357 Patent, Claim 11)

The parties originally disputed the meaning of “a 3D scanner,” which appears in claim 11 of the ’357 Patent. At the Second Markman Hearing, the parties agreed on the record to the following construction, *see* Second Markman Hr’g Tr. 35:15-38:20, and the Court adopts the stipulated construction below.

Term	Stipulated Construction
“a 3D scanner” (‘357 Patent, Claim 11)	An apparatus for scanning three dimensional objects

2. Construction of “predefined threshold” (‘357 Patent, Claim 11)

The parties originally disputed the meaning of “predefined threshold,” which appears in claim 11 of the ’357 Patent. At the Second Markman Hearing, the parties agreed on the record to that the term should be construed to its plain and ordinary meaning. *See* Second Markman Hr’g Tr. 42:1-43:7.

The Court adopts the stipulated construction below.

Term	Stipulated Construction
“predefined threshold” (‘357 Patent, Claim 11)	Plain and ordinary meaning

3. “predefined accuracy” (‘357 Patent, Claim 11)

The parties originally disputed the meaning of “predefined accuracy,” which appears in claim 11 of the ‘357 Patent. However, in Creality’s Opposition and Artec’s Reply brief, as well as the Markman hearing, the parties agreed that the term “predefined accuracy” should be construed in accordance with Artec’s proposed construction. *See* Defs’ Memo. at 44; Pl’s Reply at 15; Second Markman Hr’g Tr. 42:1-43:7.

The Court adopts the stipulated construction below.

Term	Stipulated Construction
“predefined accuracy” (‘357 Patent, Claim 11)	Degree of precision defined in advance

1. “discarding at least a portion of the second data”

The parties originally disputed the meaning of “discarding at least a portion of the second data” which appears in claim 11 of the ‘357 Patent. At the Second Markman Hearing, the parties agreed on the record to that the term should be construed to its plain and ordinary meaning. *See* Second Markman Hr’g Tr. 54:2-23.

The Court adopts the stipulated construction below.

Term	Stipulated Construction
“discarding at least a portion of the second data” (‘357 Patent, Claim 11)	Plain and ordinary meaning

CONCLUSION

For these reasons, the claim construction terms in the parties' Joint Claims Construction Chart, ECF 116, are construed as set forth above.

SO ORDERED.

/s/
Orelia E. Merchant
United States District Judge

Dated: October 11, 2024,
Brooklyn, New York